MAY 10 1930

American Journal of Public Health

And *The Nation's Health*

Volume XX — May 1930 — Number 5

Disasters

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REPORT OF THE COMMITTEE

Fifty-Ninth Annual Meeting
Fort Worth, Texas, October 27--30, 1930

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American Journal of Public Health
and THE NATION'S HEALTH Vol. XII No. 5

Volume XX May, 1930 Number 5

Pre-disaster Preparedness *

CONSIDERING the various public health phases of disaster relief it can best be handled by sub-division into three sections: Pre-disaster Preparedness, Emergency Relief, and Post-disaster Relief (rehabilitation). The committee proposes to consider each as a unit and presents herewith pre-disaster preparedness as relates to the public health engineering aspect of disaster relief.

Disasters affecting cities, towns or rural areas can be classified as to causes:

1. Floods, overflows, water damage, tidal waves
2. Fires, conflagrations, forest
3. Wind, tornado, hurricane, coastal gales
4. Explosions, munitions, factories, mines, institutions
5. Drought, water supply failures
6. Disease outbreaks
7. Earthquakes

Any or several of these types of disaster may bring up problems where the mature judgment of the engineer may be of utmost importance in arriving at a prompt, effective solution.

Disasters are no longer minor or chance occurrences, but each year they are more widespread, more devastating, more demanding of the harmonious assistance of such agencies as:

1. Official, Governmental Agencies:
   - Federal, State, County and City Health Departments
   - State Militia or Police organizations
   - U. S. Army, Navy and Coast Guards
   - Agricultural, Mining, Forestry Departments
2. Official Relief Agencies:
   - National or local American Red Cross
3. Unofficial Agencies:
   - American Legion
   - Salvation Army
   - Religious and Fraternal Orders

* Report of the Committee on Disaster Relief, presented to the Public Health Engineering Section of the American Public Health Association at the Fifty-eighth Annual Meeting at Minneapolis, Minn., October 2, 1929.

The problem of harmonizing forces prior to disaster is worthy of our best efforts, and it is hoped that this report may stimulate some thought, if not action.

STATE DISASTER BOARD PLAN

Primarily any relief work is governed by the finances available, and it is recommended that for states where disasters are of common occurrence there be available through legislative appropriations an emergency fund of at least $50,000, at the disposal of the governor, to be used only in disasters of magnitude such as floods, conflagrations, hurricanes, disease outbreaks, etc., as determined by law. Such a fund should be dispensed only through state employees, and a State Disaster Board is suggested to consist of:

The Governor as Chairman
Adjutant General
State Comptroller
State Highway Commissioner
State Health Officer
Public Service Commissioner or Utility Representative
State Commissioner of Welfare
American National Red Cross representative appointed by Washington Headquarters

Partial allocations of funds, equipment, and duties, could be made in advance for emergency work and thrown into operation by direction of the governor. After a preliminary field check of losses and conditions, a meeting of such board could allot specific items, plan procedure, and get under way with very little lost motion. Pre-disaster preparedness would indicate authorized characters and methods of expenditures of funds.

1. In presenting a State Disaster Board plan it is appreciated that local conditions will indicate the structure of such a board, and that such a board is not an organization to function all the time, but merely a board of known components called into service at the will of the governor, who as chief executive should head the board.

2. The Adjutant General directing the National Guard or Militia should be a member, to determine the use and function of militia units. In disasters of great magnitude, involving several cities or counties, militia units from nearby points should be called in to assist local civil authorities in the protection of property, regulation of traffic, preservation of order, and similar police matters. The use of National Guard property such as tents, camping equipment, medical and other supplies, radio transmission outfits, etc., may be necessary and can best be administered by Guard personnel. If necessary, any area may be placed under military control and administered under martial law, but such action is not recommended.

3. The state comptroller should designate the manner in which emergency financial matters are to be handled.

4. The state highway commissioner might be instrumental in securing transportation and crews of laborers from other parts of the state so that roads may be reopened, bridges and automobile traffic restored. State trucks can well be used for emergency work, handling supplies, equipment and perhaps the dead.

5. The state health officer should be a member of the board because of the increased possibilities of spread of communicable disease under conditions created by disasters, and the importance that the press and general public attach to the aftermath of a disaster with its sudden change in the ordered life of thousands of people. He should be the executive head of all health matters, acting, however, only in coöperation with established local health agencies, or where such an agency does not exist or is incapable of proper functioning.

6. The state public service commissioner or representative of the power, communication, or transportation utilities, should be on the board to determine the action of such utilities. Such a representative should be acceptable to the interests and they should agree to obey his orders in disaster time.

7. The State Welfare Commissioner may in some instances exercise board powers as to housing, and his assistance may be of great value in the rehabilitation program including, as it may, use of convict labor, placing of orphans in institutions, etc.

8. A representative of the American National Red Cross appointed by Washington should be on the Board to make plain the limits of Red Cross participation in the relief program and to establish harmonious relations. This is especially desirable if disaster strikes in a community which has no official governmental or Red Cross organization.

Such a board can be extended to cope with any disaster, depending upon the local conditions of government. The plan is advanced to provide for instant and effective action in an emergency and to correlate the work of state agencies with that of the American National Red Cross. Though the American National Red Cross is the official disaster relief agency, chartered by the federal government, among other things—

> . . . to continue and carry on a system of national and international relief in times of peace and to apply the same in investigating the suffering caused by pestilence, famine, fire, floods and other great national calamities and to devise and carry on measures for preventing the same . . .

nevertheless there are certain things which we might expect, which it will not do, even though it would materially aid in establishing conditions greatly affecting the morale, health and welfare of the stricken people. In the field of public health the policies are rapidly becoming reorganized under William DeKleine, M.D., Director of Medical Service, an official experienced in the problems confronting the public health officer.

The foregoing is intended to provide the background for the work of the public health engineers. Considering the state as a unit, the engineer of the state health department is usually the keyman for immediate field action necessary to protect the public health. He therefore should be charged with the pre-disaster organization of all engineering and sanitary personnel and procedure.

THE PROBLEMS

The problems involving engineering activities in the mentioned types of disasters are:

Provision of emergency housing accommodations
Provision of necessities of life, such as, water, food, including milk and ice and waste disposal
Handling of refugees—creation of good morale
Disposal of dead—human and animal
Rehabilitation of families

In each, the engineer has a vital part. For emergency housing the availability of such structures as schoolhouses, especially those equipped with cafeteria facilities, churches, parish or Sunday school rooms, gymnasiums, etc., armories, warehouses, ball parks, race tracks, fair grounds, auto tourist camps, etc., should be known. These could be used temporarily for refugee or labor camps. No place should be considered unless safe drinking water under adequate pressure is available or can easily be made so. Tent camps for refugees are not desirable and unless absolutely necessary should not be used. The engineer should be able to establish, or tell those who desire to establish a camp where it can best be located, where safety from inundation is assured, good drainage available, safe water supply under pressure can be had. The transportation of foodstuffs into the camp must be considered. Good excreta disposal is essential and should be provided at the earliest possible moment. Pit privies must be furnished in the absence of sewerage. Shower baths should be installed promptly.

Dr. DeKleine says:

> The organization of refugee camps, emergency hospitals and the like are, I believe, functions of the Red Cross although . . . the selection of the site and sanitary regulations should meet the requirements of the local and state health departments. Their advice should be sought wherever possible.

Provision must always be made to protect the refugees or laborers in camps from insects pests whether they transmit disease or not.

Water service should be restored at once and the engineer should be able to assure the public at the earliest possible moment that the

supply is available and safe. Great care should be exercised in condemning a supply or advocating the boiling of water for drinking purposes. The harm done to the morale of the people and the danger of their using water more unsafe than the public supply should be weighed against its chance pollution. The engineer should arrange beforehand for running transmission lines to the water works, thence to the hospitals, milk plants, emergency housing structures, etc. Standby gasoline engine or electric generating equipment should be part of every water works, but if not available, fire engines can be used if emergency couplings are available. Plans for chlorination should be made, but care taken not to create tastes or odors which would lead people unaccustomed to chlorinated water to seek other sources of supply.

In rural sections the use of chemical sterilization is recommended and full utilization of bottled water supplies in the area should be planned. Chlorination should be done at the plants. Water can often be shipped into the area in tank cars, and provision should be made in advance with the railroad officials (water supply department) for the prompt handling of such shipments from approved sources. These should be chlorinated in the car at the source.

For staple food supplies the engineer need have little worry as they will be forthcoming. In time of disaster milk preferably should be canned or dried. The engineer should know the character and capacities of available pasteurization equipment, for medical officers, or the local authorities, may order all milk pasteurized when the local plants can handle only one-tenth of it. Preliminary agreements with the railroads should be made to have express service given to shipments of water, milk, ice, perishable foodstuffs and urgent supplies. Special marking tags might be developed to expedite shipments.

Waste disposal can rarely be planned in advance but ordinarily pit privies can be planned for, or the restoration of plumbing service. If the plumbers can be approached in advance there is a possibility of securing a detail from a nearby town to make temporary repairs.

Creation of good morale among the citizenry, and handling of refugees, are problems that the engineer has little to do with, but he can be of great assistance in explaining to excited councilmen, committees, etc., the simple facts of disease transmission. The engineer has to meet all conditions arising, always bearing in mind that optimism is worth a lot in times of disaster. In disasters of large magnitude the engineer may be called upon to assist in gathering and disposing of the dead. His knowledge of soil and topographical conditions may indicate to him what method of procedure—burial or cremation

—is possible. Animal bodies can best be disposed of by incineration, using wood débris and oil. Burial may be used if topographical conditions permit.

PERSONNEL

The engineer should know definitely where persons are who might be listed as available when needed; how long they can be kept on duty; and how their services may be obtained. Among the needed personnel may be listed:

1. Trained Public Health Engineers and Sanitary Inspectors:
   State, county, city, or district departments
   Federal, U. S. Public Health Service
   On staff of large utilities or manufacturing plants
2. Plant Operators:
   Water plant employees, filter men, chemists, pump men, etc.
   Milk plant pasteurization operators, etc.
   Sewage treatment plant operators

In the time of disaster, assistance can be called for from men who are in some measure in touch with the local conditions, who appreciate the natural conditions of the area, who know how to handle very similar problems. Thus for a disaster affecting one area, the first call for personnel should be made upon men within that state or nearby states. Full utilization of local (state) personnel should be made before outside assistance is sought.

The engineer should have available a list of those who can be mobilized and to whom the request for such assistance should be sent. It is also of vital importance to know just how long such assistance should or can be kept without incurring financial obligations. Often men will be freely loaned by their employers for the emergency, but after the glamour of relief work disappears and routine is established that "going home" call must be met. Definite understanding must be had as to the duration of service of drafted personnel, and in every case it should be definitely understood that no man is to leave his post until relieved by orders from the official in charge. Otherwise a trained water works operator may be detailed on a plant and left in charge, and perhaps two days later one may find him gone and the plant running by itself. Preliminary understanding is the only way to handle volunteer service.

Necessary labor should be carried on a regular pay roll and no dependence placed upon volunteers of the laboring class. Twenty-five paid laborers are worth more than 250 volunteers, and provisions should be made for prompt hiring and paying of such men from the state funds. This turns loose the money so needed in a devastated

area. A few dollars in the pockets of a man who has lost all is a tremendous factor in restoring courage and morale.

Here it might be wise to mention the policy of the Wallace and Tiernan Company with regard to disaster relief work. Every field representative of this company is directed to report in person to the chief engineer of the state board of health having jurisdiction, equipped with such supplies and materials as are available, and to place himself and equipment at the orders of the chief engineer. Such a policy is to be commended.

SUPPLIES AND EQUIPMENT

In the matter of supplies and equipment, each engineer will have to consider what are needed, where they can be obtained most quickly and who will pay for them. Such supplies are:

1. Chlorine control apparatus, gas and orthotolidine for water and sewage sterilization
2. Hypochlorite and similar materials for household, field or small plant use
3. Automobile and railroad tanks for transporting water and location of acceptable supplies
4. Gasoline engines, portable electric pumps and generators for pumping water
5. Water storage tanks, 5-gallon glass bottles, milk cans, field workers' canteens
6. Outboard motors, trucks capable of negotiating flooded roads
7. Disinfectants, hydrated lime, cleaning compounds, commercial preparations, deodorants, oils for mosquito work, etc.
8. Insect repellents, sprays, etc.
9. Tents, barracks, armories, race tracks, warehouses
10. Camping equipment, cooking and eating utensils, wire screens, blankets, mosquito nets
11. Milk plant supplies, thermometers, etc.
12. Fuel, oils, gasoline, canned heat for field use
13. Incidentals, flash lights, raincoats, high boots
14. Disaster data

Each engineer should study his area carefully and check it at least yearly. A small supply of materials might well be kept on hand especially for the sterilization of water. It is also thought advisable to have a supply of what may be called "disaster data booklets," devoted to the type of disaster prevalent in each state, to be distributed among the population affected, telling in simple language the facts of disease prevention in time of disaster and assuring the people in no uncertain terms that odors, from dead animals, for example, will not "breed disease," that cholera will not break out suddenly because of the overflow of land, etc. Some statements as to disinfectants, their use or

abuse, would be welcome. Public health workers are often too fearful of results, whereas in times of disaster the morale of the public must be restored and their fears allayed. If one is hesitant about statements the public soon looses faith in him. Directions must be simple and easily understood, and capable of being carried out under disaster conditions. Outboard motors, resuscitation apparatus, oxygen hoods, pulmotors, gas masks and such equipment should be available to some state agency, or the knowledge of where it can be obtained known to the engineer.

The engineer in disaster relief must be one of the workers as well as an executive; he must know the people who will be found on the job at such times. He should prepare for disaster by having many close friends who are in key positions with utilities, relief organization officials, etc. He should be an active member of such organizations as the American National Red Cross, and American Legion. Membership in the clubs such as Rotary, Kiwanis, etc., is invaluable, for through such organizations desirable contact is established throughout the state. Fraternal organizations are also of value. The wider his acquaintanceship, and knowledge of his state or city, the better it is for him in time of disaster. Friendship is the best shear for cutting red tape and getting to the right person. Advance information as to courses of storms, height and approximate time of overflow, etc., can often be secured from:

1. Official Governmental Bureaus, Weather, Forestry, Mining, War and Navy Departments, Engineering Offices
2. Public Relations Officers of Railroads, Utilities, Telephone Companies, Radio Companies, etc.

Governmental airplanes can sometimes be had to make a rapid reconnaissance and preliminary estimate of the situation. Maps of all descriptions, including railway right-of-ways, maps of levees and drainage districts, etc., are of value in locating high areas for camp sites.

PREPAREDNESS

In every state there are communities having American Red Cross chapters. These chapters are given charters defining the territorial limits within which they can operate. In some states there are large areas in which there is no Red Cross organization or territorial responsibility. It is suggested that some plan could be devised by subdividing the state into districts, and assigning to the local chapters the responsibility for carrying relief in event of disaster within their area rather than limiting their action to charter definitions. In this way rural disasters could be more easily handled. Each Red Cross chapter

should have a local Disaster Preparedness and Relief committee (see A. R. C. No. 209—*When Disaster Strikes*), with sub-committees covering food, clothing, housing, transportation, medical aid, etc.

The engineer should know the functions of these committees and their availability—they are valuable aids to him in any preparedness work and he should use them.

Local health departments should be organized for disaster relief work and their organization may be patterned after that of the state health department. Especially should the local health department have its staff working in harmony with all relief agencies and the time to establish cordial relations is before disaster strikes.

The need for state health departments to be prepared for disaster duties is becoming more apparent every year. The public health problems that follow in the wake of every storm and flood are often staggering, and unless health departments are prepared serious difficulties may be expected. The midwestern tornado of 1925, the Mississippi flood of 1927, and Florida's hurricanes of 1926 and 1928, are illustrations. Each state health department should be organized to handle its own emergency problems. Outside agencies may offer assistance when health departments are not able to cope with the problems; but each health department must realize that public health supervision is its responsibility.

Disaster preparedness should be considered as a public health necessity by every state health department, as well as an opportunity to render better service. The State and Provincial Health Officers and the American Red Cross have given this subject much study. It is therefore recommended that this Association take some definite steps to develop a program with the various official agencies.

The engineer is but a part of a health organization though fortunately he is alert to the call of danger and never fails to answer. He has an opportunity to blaze the way by organizing his own department on a disaster relief program and then selling his ideas to his chief. The problem is not a small one—it is worthy of the best of us. It is an amazing opportunity for real constructive service. As engineers we have a definite part in the program, and we offer our coöperation and services to similar committees of other organizations such as the American Red Cross, which has no engineering personnel.

AMERICAN NATIONAL RED CROSS POLICY

What can be expected of the American National Red Cross in matters of interest to the engineer? Dr. DeKleine stated before the State and Provincial Health Authorities of North America:

The Red Cross deems it important that every sound and practical public health measure which will contribute to the immediate health and well being of the people of the disaster stricken area shall be utilized to the fullest extent. It is willing to assist local health agencies in this effort and contribute the additional personnel, supplies and facilities which they lack or cannot otherwise secure. . . .

Financial and other assistance will be given when the official health agencies are not able to cope with the problem, for reasons already mentioned, and when it is clearly indicated that such assistance is needed and wanted. Where health departments do not have and cannot otherwise secure sufficient funds or personnel the Red Cross will purchase or otherwise provide the supplies and facilities necessary, and help secure the additional personnel.

The Red Cross will make every effort to maintain a friendly and coöperative relationship with all the medical and health agencies and endeavor to coördinate all the health activities in the disaster area.

E. L. FILBY, *Chairman*
J. H. O'NEILL
E. A. REINKE
H. F. FERGUSON
A. F. ALLEN

Antivivisection

THERE are many "Anti"-bodies, apart from those which save us from disease. Some of them are good, most of them are bad. I cannot bring myself to object to anti-aircraft guns, and there is probably much to say for the anti-Saloon league. Anti-dazzle, anti-fire, anti-germ, anti-vibration, anti-waste, and anti-slavery (to quote the telephone directory), all sound beneficent enough. In anti-prohibition, however, anti-socialist, anti-communist and anti-vaccination we begin to tread on the dangerous ground of propaganda; while in London the anti-mind is revealed, in its highest form, in four separate and independent anti-vivisection societies, all fighting against one another in the same great cause. This anti-mind is no new phenomenon. In my recent researches I came upon an Anti-Rail-Road Journal dated 1835. The Editor claims, as Dr. Hadwen would, that he is "fighting only on the side of truth," "on behalf of some of the most valuable, but least defended interests." This journal contains "an exposure of the Railway System," and it is interesting to record that the list of those who subscribed to a pamphlet "Rail-Road Impositions Detected" is headed by the Provost and Fellows of Eton College, followed by fifteen canal companies, three steam waggon companies, several public houses, and a representative of Messrs. Pickford, carriers. The high ideals professed, and the flowery language employed, by the anti-rail-road enthusiasts of 1835 are so similar to those of anti-vivisection to-day that there are grounds for the hope that the future of both may be the same. . . . I admit—to its credit—that the Anti-Rail-Road Journal avoided calling upon the Almighty to bear witness to the purity of its motives; the Anti-Vivisectionists have not the same compunction.—From "Enemies of Knowledge," by Professor A. V. Hill, *The Quarterly Journal of the Research Defence Society*, Summer, 1929, p. 8.

Public Health and Medical Problems in Disasters*

WILLIAM DEKLEINE, M. D., F. A. P. H. A.

Director, Medical Service, American National Red Cross, Washington, D. C.

THE American Red Cross is a disaster relief agency chartered as such by the federal government. The Congressional Charter, under which it operates, charges it, among other things, with the duty —"to continue and carry on a system of national and international relief in time of peace and to apply the same in mitigating the sufferings caused by pestilence, famine, fire, floods and other national calamities, and to devise and carry on measures for preventing the same."

Funds for maintaining the Red Cross organization are, however, not obtained through governmental sources, but entirely through voluntary subscriptions. It is therefore a semi-official agency. Its duties in disasters are official, but the financial support for all its activities is voluntary.

The Red Cross functions in the field principally through the medium of local chapters, of which there are about 3,500 in the continental United States, 10 in our insular possessions and neighboring islands. Where chapters are prepared for disaster duty, they generally assume the leadership in the emergency relief work. Chapter preparedness is one of the objectives of the national organization. Such communities, therefore, conduct their own relief work at least until it is determined that outside assistance is necessary. The national organization participates in the relief program only where communities are not able to cope with the situation, or where assistance is urgently needed or requested.

Red Cross relief in disasters is not based on the loss sustained by individuals or families, but on actual need only. Relief is intended primarily for the emergency needs of those who are in distress—to feed, clothe, and shelter them temporarily; to safeguard their health; to provide medical, nursing and hospital care; to assist them in rebuilding their homes and to help restore normal living conditions. Those individuals and families who are able to cope with the situation without material assistance are expected to do so.

* Read before the Public Health Engineering Section of the American Public Health Association at the Fifty-eighth Annual Meeting at Minneapolis, Minn., October 2, 1929.

There is, however, an emergency period during which it is difficult and often impossible to distinguish the one from the other. The situation is often so very critical that assistance must be given to every one who appears to be in need. That applies to medical as well as to other forms of relief. The necessities with which to sustain life and health must be provided promptly for all, and must be continued until the critical period has passed. There is no time to investigate.

Every effort is made to organize the relief work as early as possible on the basis of actual need. All families and individuals who are receiving help, or may need it, are registered; their circumstances are carefully investigated; and relief continued only for those who deserve it. Rebuilding the homes and other rehabilitation problems are matters that require careful investigation and study before awards are granted for that purpose. In Red Cross language, this phase of relief work is designated as the rehabilitation period.

The emergency period may last only a few days, or continue for several weeks. Refugee camps are generally necessary in large disasters. They are hurriedly set up in buildings or in army tents. Food must be provided through community kitchens and canteen service. Those seriously ill and injured are taken to hospitals in the community, or in neighboring cities. Medical and nursing service, emergency medical stations and increased hospital accommodations must frequently be provided, and measures instituted for the protection of the public health. These are emergency needs and must be provided promptly.

The public health and medical problems are not limited to the emergency period. Many of them extend over considerable time and new ones may develop several weeks after the disaster. There may be a sudden increase in illness among the disaster population. Pneumonia and other respiratory infections are not uncommon. Typhoid fever caused by contaminated water, scarlet fever, measles, and smallpox resulting from overcrowding, may occur in epidemic form. Dysentery, particularly in tropical climates, and malaria may increase. Special maternity service must sometimes be provided particularly where the disaster involves a large number of families as in the Mississippi flood. These problems frequently hinder the progress of the rehabilitation program and must be solved before normal living conditions can be restored.

There are two major health problems in nearly every large disaster —safeguarding the health of the disaster area, and providing medical care for the sick and injured. From an administrative point of view these are distinctly separate problems and must be so regarded in

organizing the relief work. The first is the duty of the constituted health authorities; the second is the function of the local medical profession and hospitals.

The Red Cross does not sponsor or direct the health activities in a disaster area; neither does it assume the responsibility for the care of disaster patients. These are clearly the duty and function of local agencies. If, however, communities have not adequate health service, or if the medical, nursing and hospital facilities are inadequate, it is the duty of the relief agency to assist them. There is no attempt to supersede local agencies. The Red Cross can render the best public health and medical service in disasters, we believe, not by sponsoring these duties, but by providing for the local health authorities and medical profession the supplies, facilities and personnel which they lack and need for the emergency.

It is important that every sound and practical public health measure which will contribute to the immediate health and welfare of the people in the stricken area is utilized to the fullest extent. The sudden change from normal life in the home to crowded and often unsanitary conditions in refugee camps and other places of shelter; the contamination of water supplies, particularly in floods; the increased area of stagnant water in districts already infested with malaria; diarrheal diseases, especially in tropical climates; and other problems demand serious effort on the part of public health officials. Much unnecessary illness can be prevented if prompt action is taken and if the public health work is organized and conducted on the basis of sound public health policy and procedure. Incidentally, a disaster affords an excellent opportunity to educate the public to the advantages of adequate public health protection.

The Red Cross endeavors to coöperate in every way possible with the local medical profession and to assist them in the difficult problems which confront them. It aims to provide for them what they lack and need for the emergency. In organizing the medical relief work, every effort is made to maintain and restore a normal relationship between physicians and patients. Preference is always given to local physicians when it is necessary to employ them for duty at emergency stations, refugee centers, or to assist health departments at immunization clinics.

Where disasters cover a large territory, additional medical and public health personnel are frequently required, to assist in the administrative duties, and to help make a survey of the critical needs of the area. Representatives of the U. S. Public Health Service, the Medical Service of the Army, and physicians with previous disaster

experience often assist in these duties. It should be understood, however, that they are used primarily for the purposes indicated and not for giving medical care to disaster patients, or for local public health duty.

The direction and supervision of the nurses employed by the Red Cross for disaster duty cannot be delegated to any other agency. Because of the large numbers frequently employed, and because of the nature of their work, it is necessary that they be directed by the Red Cross Nursing Service. Through direct contacts with the home, they are frequently able to obtain information most valuable in determining the real need of many families. It is therefore important that a very close liaison be maintained between the Nursing Service and other Red Cross divisions. This is not possible unless they are directed and supervised by the same agency.

The public health and medical activities in which the Red Cross is most frequently called upon to assist or participate may be summarized as follows:

1. Providing additional personnel—physicians, public health nurses, sanitary engineers and sanitary officers—to assist health departments and to staff emergency medical stations, emergency hospitals, and refugee centers. The nurses provided by the Red Cross generally serve the dual purpose of assisting in public health nursing and in bedside care of disaster patients in the homes and hospitals.

2. Sanitation of the disaster area—This includes examination of the public and private water supplies, the adoption of measures to insure safe drinking water and food supplies, the disposal of dead bodies and other sanitation problems.

3. The control of communicable diseases—This includes the usual measures such as isolation in the home, hospitalization and immunization. The immunization of susceptible individuals against typhoid and smallpox is generally an important public health activity in disasters.

4. Providing additional hospital facilities—This is accomplished either by expanding existing hospitals, or by establishing independent emergency hospitals in suitable quarters. The latter are set up only where there are no local hospitals or where expansion is not possible or desirable. Tent hospitals are used only as a last resort. Provision must sometimes be made for the care of maternity cases.

5. Establishing emergency medical stations and dispensaries at refugee centers and other convenient places where disaster patients may apply for medical care.

6. Providing public health and medical supplies for use by the health agencies, physicians and nurses. Smallpox and typhoid vaccines, tetanus and diphtheria antitoxin, bandages, surgical dressings and a variety of medical and surgical supplies are generally necessary.

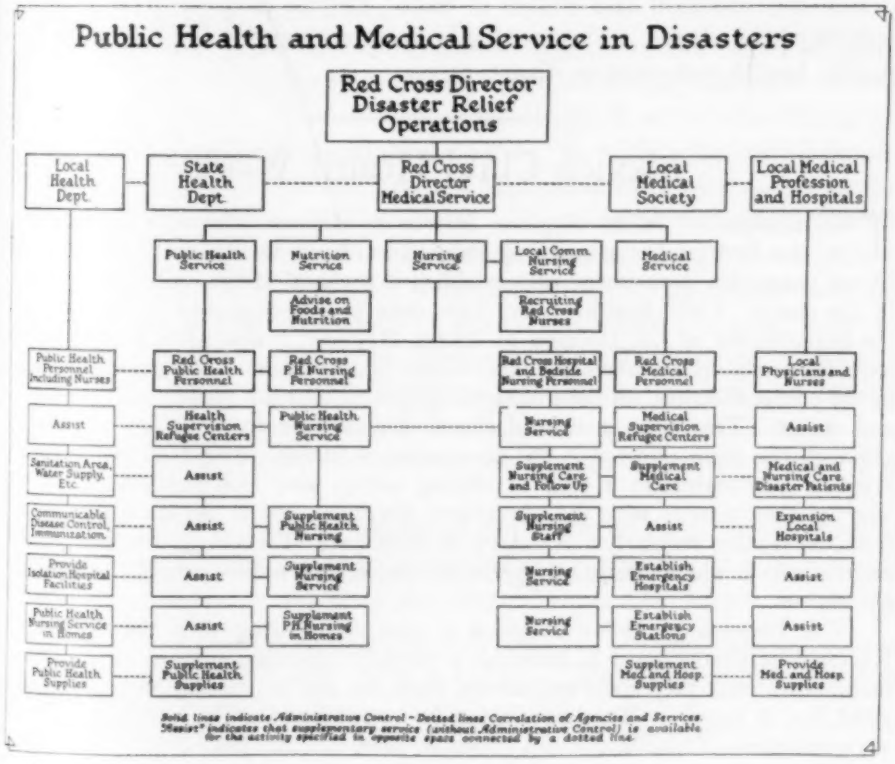
7. Medical and nursing supervision of refugee centers—The care of individuals temporarily housed in refugee centers is a definite responsibility of the Red Cross.

Refugee camps, emergency stations, and emergency hospitals directed by the Red Cross are, for all intents and purposes, Red Cross families or centers. That is especially true of refugee camps. The

Red Cross is responsible for the administration of the affairs of these centers. It provides the necessities with which to sustain life and health and—what is more—it pays the bills. It must also accept certain responsibilities for the health supervision of these camps, and for directing the medical and nursing services.

This should not be interpreted to mean that local physicians and official health agencies do not have access to these centers and have no responsibility toward individuals temporarily under Red Cross care and supervision. Physicians are expected to maintain the same relationship with disaster patients in camp and in emergency hospitals as with those outside. The public health officials must exercise the same authority and relation toward Red Cross centers of this character that they do, in normal times, toward other institutions or families where a large number of people are housed. The enforcement of laws and regulations governing the control of communicable diseases, the immunization of individuals in camp as well as those outside, and similar duties must be assumed by the official health agencies.

The Red Cross must, however, assume certain definite responsibilities for the health supervision of these centers and for certain


Public Health and Medical Service in Disasters
Red Cross Director Disaster Relief Operations
Local Health Dept.
State Health Dept.
Red Cross Director Medical Service
Local Medical Society
Local Medical Profession and Hospitals
Public Health Service
Nutrition Service
Nursing Service
Local Comm. Nursing Service
Medical Service
Advise on Foods and Nutrition
Recruiting Red Cross Nurses
Public Health Personnel including Nurses
Red Cross Public Health Personnel
Red Cross P.H. Nursing Personnel
Red Cross Hospital and Bedside Nursing Personnel
Red Cross Medical Personnel
Local Physicians and Nurses
Assist
Health Supervision Refugee Centers
Public Health Nursing Service
Nursing Service
Medical Supervision Refugee Centers
Assist
Sanitation Area, Water Supply, Etc.
Assist
Supplement Nursing Care and Follow Up
Supplement Medical Care
Medical and Nursing Care Disaster Patients
Communicable Disease Control, Immunization.
Assist
Supplement Public Health Nursing
Supplement Nursing Staff
Assist
Expansion Local Hospitals
Provide Isolation Hospital Facilities
Assist
Supplement Nursing Service
Nursing Service
Establish Emergency Hospitals
Assist
Public Health Nursing Service in Homes
Assist
Supplement P.H. Nursing in Homes
Nursing Service
Establish Emergency Stations
Assist
Provide Public Health Supplies
Supplement Public Health Supplies
Supplement Med. and Hosp. Supplies
Provide Med. and Hosp. Supplies
Solid lines indicate Administrative Control – Dotted lines Correlation of Agencies and Services.
"Assist" indicates that supplementary service (without Administrative Control) is available for the activity specified in opposite space connected by a dotted line.

medical and nursing duties. The communicable diseases must be promptly identified and isolated; isolation facilities must be provided; kitchens, buildings and grounds must be kept clean and the food supply protected against contamination; adequate toilet, bathing and laundry facilities must be provided; and the general sanitary standards and regulations of the local and state health departments carefully observed. These are definite responsibilities of the Red Cross health and medical service.

The accompanying chart attempts to show the administrative set-up of Red Cross public health and medical activities in disasters, and how each division functions in relation to local health departments, the medical profession and the nursing and hospital services. The chart does not attempt to outline the activities of health departments or other local groups, but outlines only Red Cross duties and indicates how they are correlated to the activities of local agencies.

It is of prime importance that health department and Red Cross public health activities in disasters are carefully coördinated. There should be no overlapping or duplication of services, or misunderstanding of purpose. This necessitates bringing these agencies together to study the problem; to formulate policies and working agreements; to define the function and duties of each; and to prepare routine interrelating procedures. Unless this is done we cannot hope to have one public health program in disasters.

Mexico Child Health Work

THE Division of Infant Hygiene, Service de Higiene Infantil, was established by the Federal Department of Public Health of Mexico early in 1929. In recent years this department also established prenatal clinics in the capital and in the states. Child health centers have been in existence since 1921, and since the organization of the Division of Infant Hygiene, 5 new child health centers have been established where prenatal advice is also given. The centers, situated in the poorer districts, all have modern equipment and are staffed with physicians and nurses. Treatment in case of illness is also given to mothers and children, although the main purpose is the prevention of illness. The Division of Infant Hygiene also maintains a staff of visiting nurses who visit the mothers to see whether they comply with the physicians' directions and to persuade them to attend the centers regularly. A school of child care (Escuela de Puericultura) is maintained, in which courses are given for physicians, nurses, school teachers, and housewives.

The Division of Infant Hygiene is also coöperating with the Asociación Nacional de Protección a la Infancia, a recently organized private society, which maintains a maternity home and several nurseries and is planning to establish new child health centers. This association has established child health agencies in various states.—El Niño, *Revista Mensual*, Mexico City, Jan., 1930, p. 64.

Bacterial Aftergrowths in Water Distribution Systems*

THE Committee on Water Supply has directed its efforts during the past year largely to a consideration of the above subject. It is known that a few cities throughout the country are having trouble with what appear to be growths of *B. coli* in the water after it leaves the purification plant, or the point where the water is chlorinated. The *B. coli* content of the water in some cities has, at times, been found so high in certain parts of the distribution system that it leaves doubt as to the safety of the water for drinking purposes. This is especially true where the *B. coli* content is the sole standard of quality.

Consideration is given here to causes of aftergrowths and not to pollution. Any water may become polluted if the proper protections are not provided, but it is believed that there must be some special condition to cause *B. coli* to increase materially in water. We hope that finding the conditions under which it will increase will enable many cities to apply a remedy.

To obtain some idea of the extent of troubles from bacterial aftergrowths, a questionnaire was sent to 90 cities throughout the country. Forty-eight replies were received, most of which were from the larger cities. The estimated population of those to which the questionnaire was sent is about 30 millions, and the 48 replies were from those having a combined population of 25 millions. No attempt was made to make the questionnaire complete. The committee desired most of all to find places where aftergrowths were occurring. The replies may not represent the actual conditions in many instances, but give some information of value. Fourteen cities, with an estimated population of nearly 16 millions, reported that they were having or had had trouble from bacterial aftergrowths. A few others reported increases in bacterial counts after some disturbance in the mains, or occasionally in dead ends.

The following is a brief digest of the essential facts as reported by the cities having trouble from bacterial aftergrowths, or which would have trouble if the water were not treated especially to prevent them:

Albany, N. Y., has 2 open reservoirs with capacities of 7 and 30 million gallons. They are lined with brick with riprap at the top. The storage periods are about

* Report of the Committee on Water Supply, presented to the Public Health Engineering Section of the American Public Health Association at the Fifty-eighth Annual Meeting at Minneapolis, Minn., October 1, 1929.

½ day and 2 days. The water levels are above the level of the surrounding ground. Microörganisms do not grow abundantly in the reservoirs and they are not being treated to prevent such growths. The bacterial increase in the distribution system is not due to cross-connections with polluted supplies.

"There is no question but that the increase in coli in the distribution system comes from coli entering the open reservoirs from fecal matter from rats, birds, and swimmers that make use of the reservoirs, notwithstanding the fact that they are well lighted and patrolled up to 11 P.M. The increase in coli starts in May with the advent of warm weather and persists well into October when the water cools. The filtered water entering the reservoir has been free from coli for 5 years in 10 c.c. portions. The water in the mains served by the reservoirs shows the presence of confirmed coli in 75 per cent of the 10 c.c. portions."

Baltimore, Md., has 8 open reservoirs with capacities of 5, 15, 20, 22, 24, 35, 195 and 500 million gallons. Four of the reservoirs are lined with concrete and 4 with stone riprap. Six have the levels of the water above that of the surrounding ground and 2 have the ground above that of the water on two sides. The 500 million gallon reservoir is not in regular service. The water is treated with hypochlorite of lime for the reservoirs in use. When the large reservoir is used the water is chlorinated. There is no excessive pollution from the air. Microörganisms would grow in some of the reservoirs, but such growths are kept down by the hypochlorite of lime or by copper sulphate. Cross-connections with private supplies are not permitted.

Buffalo, N. Y., has 1 open reservoir with a capacity of 116 million gallons. It is lined with stone. The storage capacity is about 2 days. The water level is above that of the surrounding ground. There is the possibility of pollution from the air. Algae do not grow abundantly, and the reservoir is not being treated. The *B. coli* in the distribution system is not due to the reservoir.

"Marked increases in the bacterial counts in the distribution system occur during the summer months when the temperature of the water runs between 65 and 72° F. By increasing the normal average dose of 0.20 p.p.m. of chlorine to an average of 0.30 p.p.m. the growths are kept well in control."

Charleston, S. C., has 1 open reservoir with a capacity of 2.5 million gallons. It is lined with brick. The water level is above that of the surrounding ground. It is possible for the water to be polluted from the air. Algae grow during the summer months. The reservoir is not in regular use, and when used the water is sterilized. Occasional increases in the bacterial counts are attributed to breaks in the mains or to heavy drafts such as may be caused by fires.

Chicago, Ill., has no open reservoirs. The water is chlorinated at the pumping stations to the extent that residual chlorine extends over the entire distribution system. If this were not done there would be bacterial increases beyond the zone of residual chlorine.

Cincinnati, O., has 2 open reservoirs with capacities of 35 and 96 million gallons. The water level is above that of the surrounding ground for the 35 million gallon reservoir and below for the 96 million gallon reservoir. There is not much pollution from the air. Water from the larger reservoir shows considerable increase in *B. coli* from about April to November each year. This reservoir has fairly abundant algal growths during the warmer months. The bacterial results for 1927 and 1928 are summarized in Table I. Clarence Bahlman gives additional information on bacterial increases.[1]

TABLE I

COMPARISON OF PRESUMPTIVE B. COLI INDEX PER 100 C.C. IN PLANT OUTPUT, HIGH SERVICE AND LOW SERVICE DISTRIBUTION SYSTEMS, CINCINNATI WATER WORKS

	1927			1928		
Month	Plant Output	High Service	Low Service	Plant	High Service	Low Service
Jan.	0.36	0.00	0.16	1.13	0.23	0.69
Feb.	0.11	0.00	0.05	0.58	0.00	0.69
Mar.	0.00	0.00	0.00	0.19	0.73	0.38
Apr.	0.33	0.33	0.16	0.10	1.09	1.17
May	0.03	0.83	1.33	0.00	0.00	2.94
June	0.10	0.15	1.64	0.20	0.15	4.14
July	0.00	0.33	2.14	0.45	0.00	3.89
Aug.	0.23	0.46	2.20	0.42	0.55	2.84
Sept.	0.37	0.13	1.08	0.17	0.80	1.65
Oct.	0.13	0.62	1.95	0.03	0.33	1.19
Nov.	0.03	0.00	1.81	0.43	0.22	0.85
Dec.	0.29	0.15	0.46	0.13	0.00	0.30
Av.	0.17	0.25	1.08	0.32	0.34	1.73

Detroit, Mich., has no open reservoirs, but there are occasional bacterial increases in the dead ends.

New York, N. Y., has 13 open reservoirs (2 not in use) with capacities up to 1,000 million gallons. Some are lined with concrete, some with brick, and some with clay or mud. The water levels are above that of the surrounding ground. They are occasionally polluted from the air by smoke, street dust, sea gulls and other birds. Microörganisms grow abundantly at times. The water is treated with copper sulphate when necessary. Water from the reservoirs occasionally shows an increase in *B. coli* in the late summer. *B. coli* and *B. welchii* are present in the mud at the bottom, growing on organic matter such as dead microscopic organisms. *B. coli* is present in the sediment of all mains. Any disturbance of the flow will cause *B. coli* to appear in the taps.

Pittsburgh, Pa., has 7 open reservoirs with storage of about 3 to 3½ days. The reservoirs are lined with concrete, and the water levels are above that of the surrounding ground. Bacteria increase in only one section of the city. Microorganisms do not grow abundantly in the reservoirs. The water in the reservoirs is not being treated. Cross-connections with private supplies are not responsible for the increase in bacteria. There is no evidence that the open reservoirs are responsible for the increase.

Philadelphia, Pa., has 3 open reservoirs with capacities of 40, 70, and 680 million gallons. They are lined with asphaltic coating on brick or concrete. Two smaller ones are balancing reservoirs, and the large one is a storage reservoir which is not in regular service. The water levels are above that of the surrounding ground. The balancing reservoirs feed only a small portion of the system. Bacterial increases occur only when the system is disturbed, or when the water is drawn from the storage reservoir. Microörganisms occasionally grow abundantly in the reservoirs in hot weather. There is no pollution from cross-connections. Copper sulphate is used occasionally in hot weather. Water from the large storage reservoir is chlorinated when used.

Washington, D. C., has 4 covered reservoirs with capacities of 8 million gallons each. They are lined with concrete, and the water levels are above that of the surrounding ground. Bacteria do not increase to any extent in the distribution system. One open reservoir, now out of service, formerly caused bacterial aftergrowths. Carl J. Lauter gives a detailed account of the aftergrowths caused by this reservoir.[2]

City No. 1—There are 7 open reservoirs with capacities ranging from 2 to 4 million gallons. They are lined with masonry, and the water levels are above that of the surrounding ground. Microörganisms do not grow abundantly in the reservoirs. There are occasional increases in the bacteria. The water in the reservoirs is chlorinated intermittently. There are no cross-connections.

City No. 2—There is 1 open reservoir with a capacity of 14 million gallons. It is lined with concrete, and the water level is above that of the surrounding ground. Microörganisms grow in the reservoir, but it is chlorinated to prevent such growths. There is no pollution from cross-connections. For the year 1928, 11.2 per cent of the 10 c.c. tubes from the reservoir showed *B. coli*, whereas only 1.6 per cent of the 10 c.c. tubes from the water delivered to the mains showed *B. coli*.

City No. 3—There are 3 open reservoirs with capacities of 6, 6, and 12 million gallons. They are lined with concrete, and the water levels are above that of the surrounding ground. A heavy dose of chlorine is used when the reservoirs are filling. Considerable dust blows into them. Chlorine and copper sulphate are used to prevent microscopical growths. There is considerable trouble from bacterial aftergrowths from March to November. There is no pollution from cross-connections. The aftergrowths are attributed to the open reservoirs.

Thirteen cities with one or more open reservoirs reported no bacterial aftergrowths. In response to the question, "Do you have any evidence of increase in *B. coli* in the distribution system from sections where there is no possibility of the water coming from an open reservoir?" 5 cities replied in the affirmative. Two or 3 have noted occasional increases, but attribute them to causes other than growths in the mains.

There are 48 open reservoirs in the cities reporting bacterial increases. There is no definite information as to how many of these contributed to the bacterial increase. There is no positive evidence that such increases constitute a menace to health, yet there is no way of telling just how much was due to pollution and how much to aftergrowths. Bacterial increases, especially in *B. coli*, tend to render unreliable our main criterion for judging the safety of water. When there is the possibility of pollution, as there is for all open reservoirs, the increase in *B. coli* content should not be ignored even though there is good evidence that it is due to the *B. coli* growing on decaying microörganisms.

The *B. coli* content of the water need not be the sole standard of quality, but the same factors that are used in judging the quality of

the water entering the distribution system should apply to the water from all open reservoirs, tanks and standpipes. Sampling points should be established throughout the distribution systems so that the water from all reservoirs, tanks, etc., will be tested with a frequency that will insure a fairly good check on the quality.

The committee would urge that more study be given open reservoirs throughout the country by the various water departments with the hope of reducing the number to a minimum. Enough information is now available to throw doubt on the wisdom of using open reservoirs without continuously chlorinating the water. *B. coli* growing on microörganisms does not constitute a menace to health, but if we become accustomed to assuming that bacterial increases in the distribution system are natural growths and of no significance the occasional occurrences of real pollution will also be ignored.

JOHN R. BAYLIS, *Chairman,*
E. SHERMAN CHASE,
CHARLES R. COX,
JOSEPH W. ELLMS,
C. A. EMERSON, JR.,
HOMER V. KNOUSE,
H. W. STREETER.

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DISCUSSION

CHESTER COHEN

District Sanitary Engineer, State Department of Health, Austin, Tex.

WE are sometimes prompted to attempt to apply a varying interpretation—a different yardstick—to the bacterial results expected to be obtained from a deep and adequately protected well water supply, from a surface supply only partially treated, and from a long stored and completely treated surface water. This differentiation would, of course, complicate the problem, especially where we could not be sure of the previous condition of the mains, or their thorough sterilization prior to installation.

Our most recent experience at Laredo in dealing with a gas forming organism in the mains led us to imagine some weakness in the purification process of the turbid, highly organic, and difficult Rio Grande water. A further examination of the particular organism by Mr. Umbenhauer, indicated its particular resistance to chlorine treatment as shown in Table I.

This organism proved to be an aerobic, spore forming, rod-shaped bacillus, forming gas only after 24 hours' incubation, and producing an atypical green sheen growth on eosin methylene blue agar. In such a case we find it a little difficult to take a consistent and yet practical viewpoint. It is obvious that large chlorine

TABLE I

Chlorine Treatment	Residual Chlorine after 1 hr.	2 hr.	5 hr.	Chlorine Contact Period and Gas Formation in Broth 5—15—30 min.	60—90 min.
0.5 p.p.m.	—	—	—	+ + +	+ +
1.0 "	—	—	—	+ + +	+ +
1.5 "	0.4	0	0	+ + +	+ +
2.0 "	—	0.5	0.25	+ + +	+ +
2.6 "	—	0.66	0.3	+ + +	+ +
5.1 "	—	1.0	0.5	+ + 0	0 0

doses and long contact periods would be required to bring such a supply within the standards of the partially confirmed test.

A. F. Allen, writing from Coral Gables, advises us that although the original well supply there is usually free of *B. coli*, and although the chlorinated water at the plant was entirely free, yet occasional main samples show its presence in the completed test. These organisms are non-sporeformers and of the non-fecal type.

Much the same problem exists at Houston, although here an occasional spurious *B. coli* type occurs in the untreated well water, as well as in the distribution system. But here, too, the problem seems to be more a question of aftergrowth in the mains, either as a result of organisms passing the sterilization unit, or as a residual bacterial contamination existing in the system and remaining unaffected by the very slight or negative chlorine residual carried in the water when it reaches the far ends of the mains. An example of this condition is shown in Table II taken from the Houston analyses, where the city meter is the origin of the water supplied to wharves 11 and 12.

TABLE II

	City Meter Sta. No. 23	Wharf No. 11 Sta. No. 21	Wharf No. 12 Sta. No. 22
Bacteriological Data for Month of August			
10 c.c. tubes showing gas formation	8	12	3
10 c.c. tubes showing confirmed *B. coli*	4	7	1
No. of samples examined	16	16	17
Per cent of tubes showing gas	10.0	15.0	3.54
Per cent of tubes confirming *B. coli*	5.0	8.75	1.18
Bacteriological Data for Early September			
10 c.c. tubes showing gas formation	0	6	2
10 c.c. tubes showing confirmed *B. coli*	0	6	2
No. of samples examined	4	4	4
Per cent of tubes showing gas	0.0	30.0	10.0
Per cent of tubes confirming *B. coli*	0.0	30.0	10.0

From these preliminary data we see an indicated trend toward positive improvement at the city meter where water is being furnished to the wharves, but at the same time notice, not only a corresponding lack of improvement, but an actual lowering in the sanitary quality of the water supply at these two wharves.

In a way we regret the confusing results due to bacterial aftergrowths, since they very seriously tend to cast a doubt on the reliability of the *B. coli* test as a criterion for judging the sanitary quality of a water supply. The apparent multi-

plication of these doubtful organisms and their increasingly noticed occurrence in the distribution system is becoming most confusing to the average water plant operator and bacteriologist.

We find that the plant operator after a period of doubt and extra careful operation of his purification control process, becomes discouraged and somewhat disgruntled if his distribution system samples do not equal those taken direct from the plant. He usually concludes by assuming that the bacteriological test is unreliable and only a waste of time and effort.

While we cannot agree with such a conclusion, we do believe that overemphasis can be laid on the bacterial occurrence of gas forming organisms in the distribution system. We would be more inclined to lay special emphasis on the quality of the water as placed in the mains at the pumping plant. If regular and consistent samples of the treated water going into the mains indicated freedom from polluting organisms, and if no later polluting sources, such as cross-connections or open reservoirs, exist, we would ordinarily expect the supply to be satisfactory for domestic use. Where the above conditions obtained, we have never been able to demonstrate any *B. coli* organisms among the gas forming aftergrowths in the distribution system.

Medical Research

IT is strange how often religion, or what is alleged to be religion, is made the basis of intolerance. To pass from the sublime to the ridiculous, from the Inquisition to the present day, even a parish magazine may be used as the vehicle for anti-vivisection propaganda. In the *Parish Paper* of the Church of St. Jude-on-the-Hill (Hampstead Garden Suburb) of May 24th, 1929, the Rev. B. G. Bourchier permitted himself to ask " intelligent people " to take the opportunity of the General Election, now past, to put an end to " the waste of public money " involved in medical research. He protested there against the expenditure of 148,000 pounds during the last financial year by the Medical Research Council.

Those of us who know the admirable use to which that money is put, in promoting medical knowledge and therewith the health and happiness of the community, would wish a formal protest to be made against such propaganda in such a place. The reverend gentleman is entitled to hold whatever private opinions he chooses about the personal characters and abilities of those engaged in medical research; the use, however, of his authority and position in the national church as a means of hindering the work of an organisation which is serving mankind, at least as well as he is, is a disgrace which the authorities of that church would do well to note. It is as though the Medical Research Council were to permit an attack upon the Church of England and its priests to be launched by one of its junior workers in the pages of a Report!—From " Enemies of Knowledge," by Professor A. V. Hill, *The Quarterly Journal of the Research Defence Society*, Summer, 1929, pp. 12–13.

Bacteriological Basis for the Effective Pasteurization of Ice Cream*

THE demand from the public and the trade that ice cream be produced and handled as cleanly as milk has resulted in the endeavor to lift certain phases of milk control bodily over into the ice cream field without always giving consideration to the fact that ice cream is different from milk and therefore may have to be handled differently in some respects. However, in view of our great success in improving the quality of our milk supplies it behooves us to retain in our ice cream control all those items which are clearly applicable. Where a reasonable doubt exists as to such applicability, the question should be subjected to experimental tests.

Last year Dr. W. H. Price summarized[1] our knowledge concerning the significance of *B. coli* in ice cream. He concluded that:

> Much remains to be cleared up before we can interpret the coli test properly. . . . In the case of ice cream, the colon test has limitations in determining the efficiency of pasteurization, as it has also in determining the introduction of contamination after pasteurization. . . . We find a generally accepted opinion that the tests for *Bacterium coli* in ice cream require a thorough knowledge of the previous history of the sample to enable any proper interpretation. Such tests cannot, in the present state of our knowledge, serve as a measure of manurial pollution or as a measure of the efficiency of pasteurization. Neither do they contribute to the detection of pathogens nor to the prevention of disease transmission. *Bacterium coli* determinations may indicate that the dairy product under examination has been kept under conditions favorable to the development of bacteria commonly found in milk. The same conditions are disclosed by the Standard Plate Count, and the Direct Microscopic Count, both of which have the advantage of common acceptance and application. . . .

Irwin comprehensively reported[2] on the present status of ice cream sanitary control and showed that the states and municipalities differ in pasteurization requirements over a range from 142° F. for 25 minutes to 185° F. flash.

Zoller,[3] after an extensive inquiry to 500 ice cream companies, to which he received 179 replies, reports the temperatures and holding periods range from 140° F. for 30 minutes, to 165° F. for 30 minutes and up to 185° F. for 10 minutes, with all sorts of intermediate com-

* Report of the Committee on Dairy Products and Eggs, presented to the Food, Drugs and Nutrition Section of the American Public Health Association at the Fifty-eighth Annual Meeting at Minneapolis, Minn., October 4, 1929.

binations of temperatures and times. Seventy firms used 145° F.; 33 used 150° F.; and 12 used 160° F. all for 30 minutes.

It is generally known that several municipalities require a pasteurization temperature of 160° F. for 30 minutes, and some as low as 140° F.

In the absence of any known experimental work to demonstrate a proper temperature and time for pasteurizing ice cream, health officers have either literally followed their milk control procedure, or have assumed that, on account of the greater content in ice cream of solids (especially fat) with its presumably protective effect, the temperature must be raised to some undetermined point. They invoked the *B. coli* count, as used and interpreted in milk control, and set the requirements to be such as they thought would kill *B. coli*.

The reasonableness of assuming a protective influence by the increased solids in ice cream and the fallacy of expecting to kill all *B. coli* as a measure of effective pasteurization have recently been experimentally elucidated.

Beavens[4] has just shown that the death points of certain strains of *B. coli* which had previously been found to lie between 143–144° F. for 30 minutes, actually were raised above 145° F. for 30 minutes when 4–20 per cent lactose was added to the broth. He quotes Robertson[5] that hypertonic solutions have a protective effect up to and including 50 per cent sucrose. He agrees with the earlier workers that "the coli test is not a true index to proper pasteurization of milk."

Since the publication of Price's review,[1] Tanner and Windsor,[6] working with milk, studied 23 strains isolated from human intestines, water and sewage, and reported:

> Although neither the *Escherichia coli* (*Bacterium coli*) cultures nor the *Serratia marcescens* (*Bacillus prodigiosus*) strains used proved to be very good as indicators of efficiency of pasteurization by the holder process, for several reasons the *Escherichia coli* (*Bacterium coli*) would probably prove to be more accurate as such an indicator. It seems fair to assume . . . that *Escherichia coli*, in concentrations in which it occurs in milk, would be destroyed by exposure to 62.8° C. for 30 minutes, yet there is always the possibility of encountering resistant strains or cultures containing some resistant cells.

They thus align themselves with the preponderance of authoritative opinion that the coli destruction is not always a reliable measure of the effectiveness of milk pasteurization. Since hypertonic solutions exert a protective effect, then the coli count in ice cream, used as in milk control, is all the more unreliable.

As a matter of fact, we are not interested in the destruction of the coli organisms as such, but only as they may be easily demonstrable and possibly significant companions of pathogenic organisms which

are not easily demonstrable. If it were shown that pasteurization of commercial ice cream at 145° F. for 30 minutes is ample to kill all pathogenic organisms, then the usefulness of the coli determination would become clearly of little consequence. This information has just now been supplied.

Oldenbusch, Frobisher and Shrader[7] inoculated cream with two strains of *B. typhosus* recently isolated from cases; two strains of beta type hemolytic streptococci, one from scarlet fever, the other from septic sore throat; and a culture of tubercle bacilli of the bovine type. All of the organisms were killed in less than 7 minutes at 142° F. and in less than 3 minutes at 145° F.

They conducted similar experiments on a commercial ice cream mix, and found that *B. diphtheriae* did not survive heating for ½ minute at 145° F.; *B. typhosus* and the streptococcus were killed in less than 5 minutes; and the tubercle bacillus in 6 minutes at 145° F., and 3 minutes at 150° F.

In comparing these two sets of experiments, a slightly greater resistance was encountered in the case of the ice cream mix as compared with the cream.

Inasmuch as the number of pathogenic organisms involved was much greater than would obtain under natural conditions of contamination, they conclude that the time and temperature of 30 minutes at 143.5° F. recommended by the Committee on Dairy Products and Eggs of the American Public Health Association for the pasteurization of milk allows an ample margin of safety for the pasteurization of cream and of commercial ice cream mix.

From all of this work it follows that the *B. coli* is no more useful in determining the proper pasteurization procedure for ice cream mix than for milk. Direct work with pathogenic organisms certainly shows that a temperature of 145° F. for 30 minutes is a proper procedure for ice cream mix pasteurization.

J. H. SHRADER, *Chairman* GEO. W. GRIM E. M. PICKENS
J. H. BUCHANAN M. J. MACK

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Study of the Effects of 736 Tonsillectomies and of 741 Controls*

JOHN D. MONROE, M. D., AND V. K. VOLK, M. D., DR. P. H.

Commissioner of Health and Deputy Commissioner of Health, Oakland County, Pontiac, Mich.

IT is impossible to think of any operation or procedure which is as commonly resorted to for the correction of any and all defects or complaints as is a tonsillectomy. Our search through available literature on the subject reveals an abundance of material and an almost universal opinion that good results, both curative and preventive, are to be expected.

Kaiser, of Rochester, N. Y., has done a very thorough and gratifying piece of work with convincing conclusions.

Besides verifying the figures and results obtained by Kaiser, Barrett, Robey, Mann and others, we have drawn some conclusions as to:

1. The age group which shows the greatest improvements and the complaints, if any, which can be relieved to the greatest degree in the respective age groups.
2. The length of time after operation before improvement is evidenced and the symptoms showing the earliest tendency toward improvement.
3. The effect on the school progress of those being physically handicapped.
4. The effect on children with subnormal mentality or those who are mentally retarded and lack application and alertness.
5. The effect of tonsillectomies on the progress of children having coexisting conditions related and not related to diseased tonsils.

It has been suggested by Brokay and others that the parents should be consulted as to the child's condition following the operation. In our study the parents' opinions were obtained in each case. We believe that information secured through the parents' daily observation is likely to be more dependable than that which might be secured from any other single source; however, the teachers' observations were not overlooked. We were also mindful of the fact that this information should be supplemented by physical examinations before and after operation.

This study was based on cases operated on by private physicians

* Read before the American Child Health Association and the Child Hygiene Section of the American Public Health Association at the Fifty-eighth Annual Meeting at Minneapolis, Minn., September 30, 1929.

in the Oakland County Tonsil and Adenoid Clinics together with a small number of cases operated on in other clinics.

Oakland County's tonsil and adenoid clinic was organized because of the difficulty and expense of caring for indigent children in state institutions, and because of the lack of outpatient departments in our city and county hospitals. Each case, before admission to the clinic, was first recommended by the family physician both from the medical and financial standpoint, then carefully investigated by our field workers and by the Township Supervisor. Indigent patients and those who were able to pay up to $10.00 were admitted. The tonsillectomies were performed by local surgeons at greatly reduced fees, and we gratefully acknowledge the support given the clinic by the Oakland County Medical Society.

A careful history was taken and a physical examination made on each child upon admittance, and through this arrangement 736 cases were operated on and studied.

In determining the candidates for the clinic and for follow-up work, uniform blanks were used.

It was determined early in the study to check carefully the improvement rather than the complete cessation of complaints or symptoms. Although in many cases the symptoms or complaints were entirely absent after the operation, it seemed reasonable that our study be confined solely to improvements.

A study was made of the effects of tonsillectomies upon children who were not gaining weight and not developing normally, those with evidence of malnutrition, those with marked enlargement of cervical glands, those with rheumatic manifestations, those who complained of colds and sore throats, and those with retarded school progress and subnormal mentality.

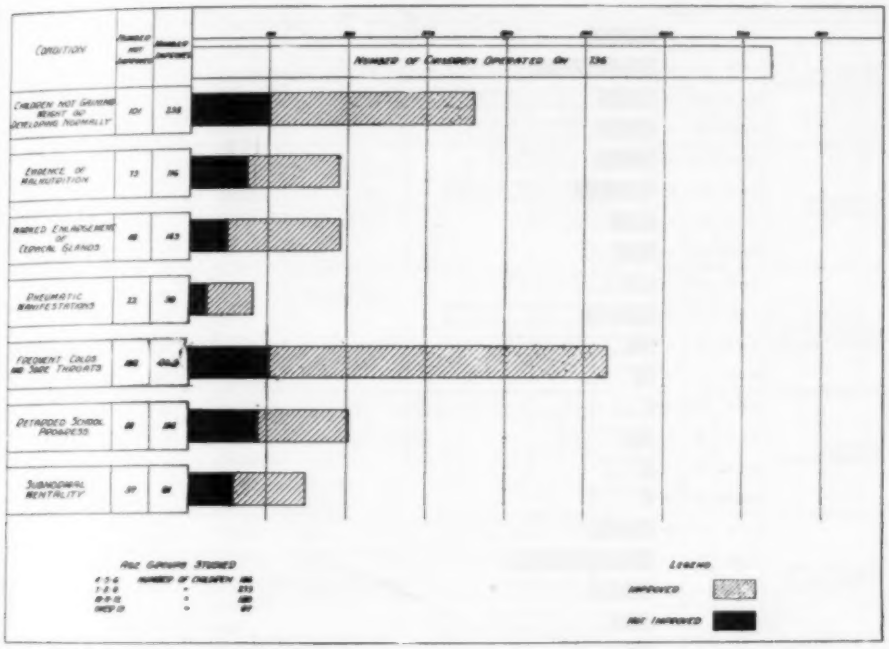
In Figure I, we have a general summary of cases studied before and after operation. There was apparently no complaint or symptom which failed to improve. In our study of cervical glands, only cases which showed marked enlargement were considered, and out of 191 cases studied, 48 children failed to show improvement. The most striking improvement occurred in the group having frequent colds and sore throats. Of the total number studied, 530 cases, or 72 per cent, had this complaint before the operation, with 102 failing to show any improvement.

The enthusiasm of the mothers in regard to the children's progress in school following the operation was very marked. Of the 222 children having this complaint only 88 failed to show improvement.

We were somewhat surprised to note the effect of this operation on the group of subnormal mentality. Out of 148 cases in this group 57

FIGURE I

STATUS OF COMPLAINTS BEFORE AND AFTER OPERATION



failed to show improvement. There was a marked improvement in cases with evidence of malnutrition. One hundred eighty-eight, or 25.5 per cent of all cases studied, showed this complaint, and there was a failure of improvement in only 73 of this group. The same beneficial results were noted in children not gaining weight or not developing normally, and in those having rheumatic manifestations.

STUDY BY AGE GROUPS

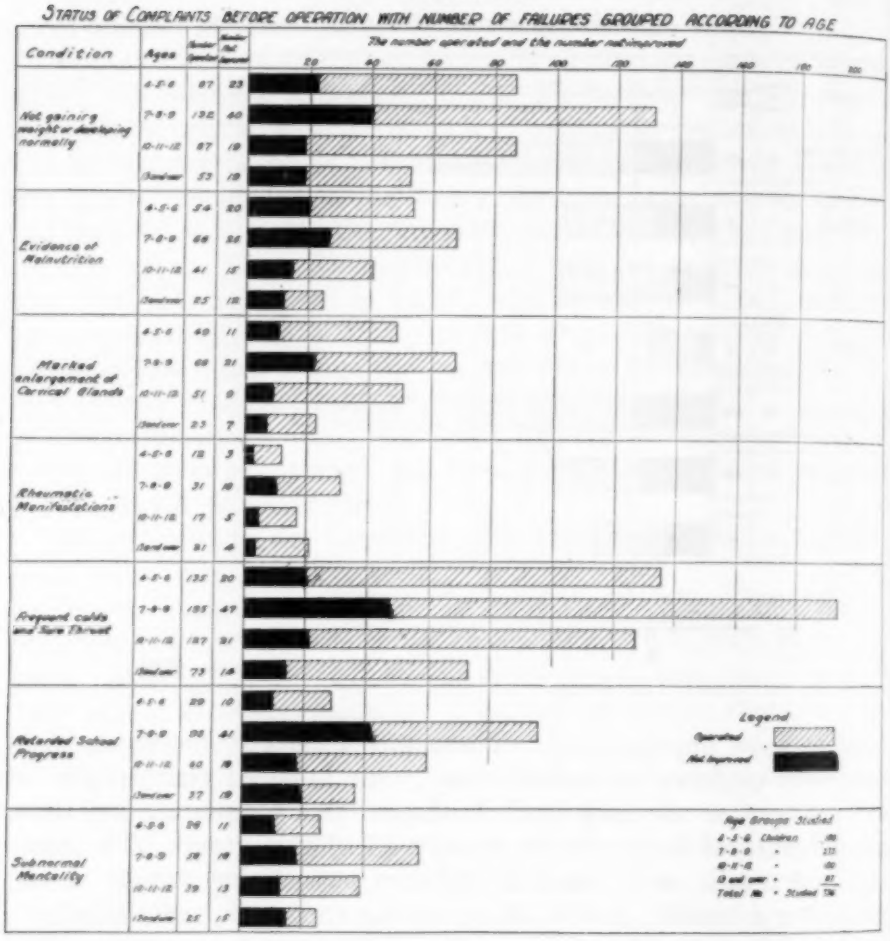
In studying the beneficial effects on children grouped according to age (see Figure II), no striking results were obtained. The most marked improvement of all complaints was observed in the younger age groups.

Failure in older age groups (13 and over) can be accounted for in many ways. The longer any ailment persisted the less marked the improvement; it was only natural for the older age group to be less responsive to improvement in school progress and mental efficiency than children in the younger age groups.

STUDY OF RESULTS BY TIME LAPSING SINCE OPERATION

In this study we have drawn some conclusions as to how soon after operation improvement may be expected. From the figures

FIGURE II

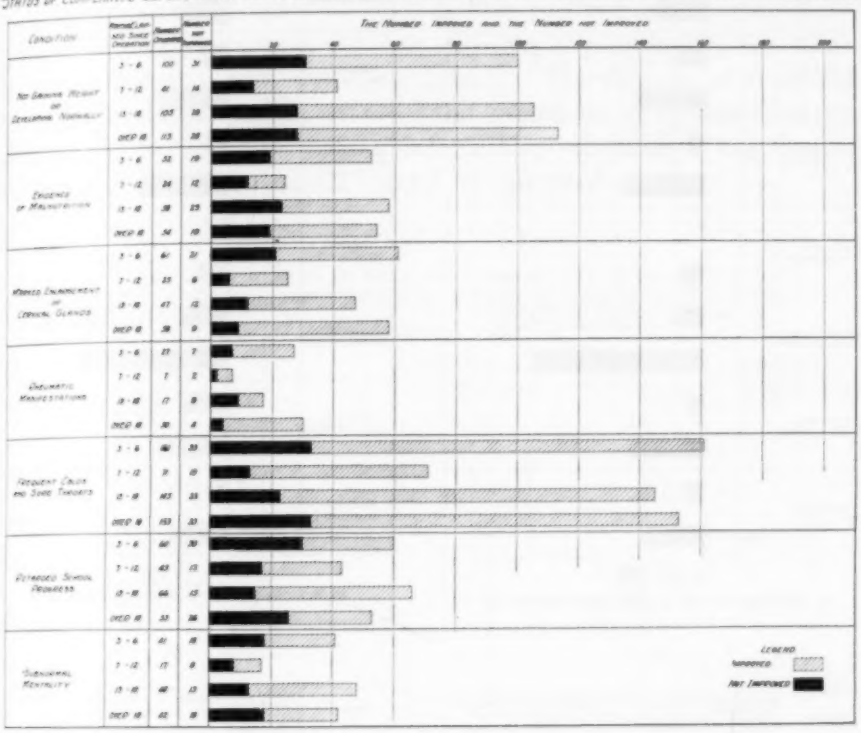


shown in Figure III, children who were not gaining weight and were not developing normally before the operation showed a little improvement during the earlier months, reaching the peak of improvement about 16 to 18 months after operation. There were no marked beneficial results in children showing signs of malnutrition, although a failure of only 36.5 per cent during the first 6 months was gratifying.

As was expected, improvement in the marked enlargement of cervical glands was not characteristic to any period. Rheumatic manifestations showed remarkable improvement during the first 6 months. Frequent colds and sore throats were decidedly improved during the first 6 months following operation. Advancement in school progress and mental development was not marked during the first 6 months after operation but there seemed to be consistent progress in the periods which followed.

FIGURE III

STATUS OF COMPLAINTS BEFORE AND AFTER OPERATION WITH FAILURES GROUPED ACCORDING TO TIME ELAPSED SINCE OPERATION



We have not tabulated the relief from mouth breathing as the study has been done many times by others with most convincing results.

General progress of those cases showing improvement in one or more complaints was very noticeable, the most outstanding results being obtained during the first 6 months. Out of 192 cases in this age group, there were 12 failures (6 3/10 per cent), or 93.7 per cent of the cases showed complete or partial improvement.

STUDY OF RESULTS IN PRESENCE OF COEXISTING CONDITIONS

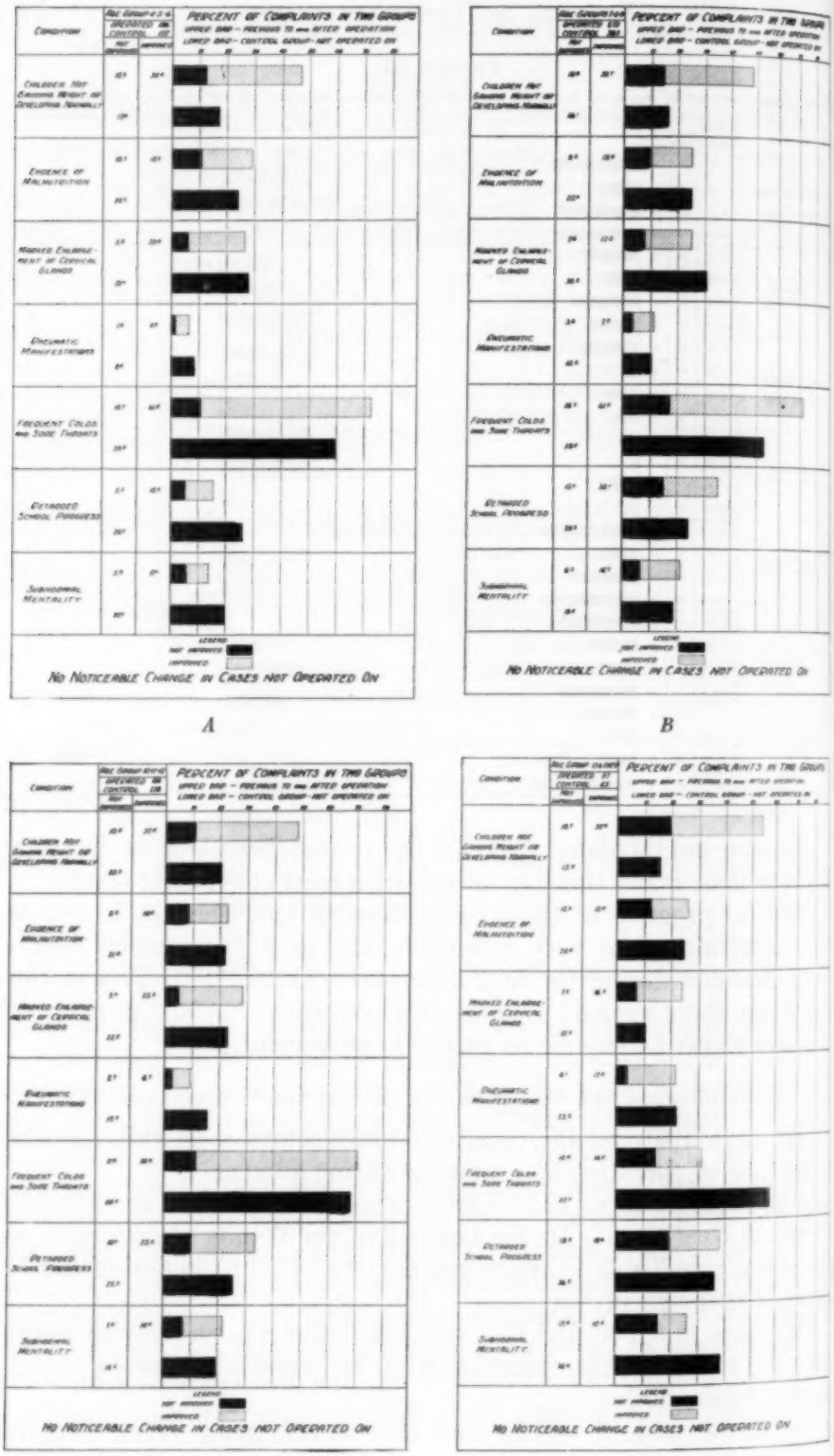
We have analyzed the results of tonsillectomies on children who at the time of operation had some coexisting ailment.

From the group of 736 children who were operated on, 120 had coexisting conditions. In the analysis of the results of operation on this group (see Table I), we found that 43 failed to improve, and 77 showed improvement.

We have failed to find that coexisting ailments had any influence upon the results of the operation with the possible exception of pulmonary tuberculosis.

From the table it will be seen that in this group there were 26

FIGURE IV


Condition
Percent of Complaints in the Group
Upper bar – previous to and after operation
Lower bar – control group – not operated on
Children Not Gaining Weight or Developing Normally
Evidence of Malnutrition
Marked Enlargement of Cervical Glands
Rheumatic Manifestations
Frequent Colds and Sore Throats
Retarded School Progress
Subnormal Mentality
Legend
Not improved
Improved
No noticeable change in cases not operated on
A
B
C
D

cases of pulmonary tuberculosis, 16 of which failed to improve. Considering that the number of cases failing to show improvement is almost twice as great as the number showing improvement, the ratio of failure to improvement would be 2 to 1. The figures, of course, are too small to do more than bear out the consensus of opinion that great care should be exercised before determining whether or not the child with pulmonary tuberculosis should be operated on.

TABLE I

ANALYSIS OF RESULTS OF OPERATED CASES IN WHICH COEXISTING AILMENTS WERE PRESENT AT TIME OF OPERATION

Total Number of Cases 120

Conditions Present	Total Number of Children	Number Failed to Improve	Number Showed Improvement
Pulmonary Tuberculosis	26	16	10
Heart	7	1	6
Ear	16	5	11
Chorea	5	2	3
Dental (marked defects)	20	7	13
Infectious Diseases following within 10 days	5	3	2
Sinus	13	5	8
Hay Fever—Asthma	2	1	1
Kidney	7	2	5
Nervousness	9	0	9
Surgical	8	1	7
Gynecological	2	0	2
Total	120	43	77

This table, with the one exception mentioned, shows us that coexisting conditions are not contraindications for operation. As a matter of fact they might even be additional reasons for operation.

STUDY OF CONTROL GROUPS

In our control group (see Figure IV), we have examined 741 children whose state of health was apparently similar to that of those in the group operated on.

The general progress made by the children in the control group was, as would be expected, unsatisfactory. Children with infected tonsils retained the focuses of infection and the symptoms and complaints which were present at the time of the first examination were still apparent at the check-up made a year later.

Careful analysis of Figures V—A, B, C, and D, leads us to assume that the theory of waiting for the child to outgrow its defects is not justifiable.

SUMMARY AND CONCLUSIONS

From an analysis of the complaints of 736 children before and after operation, compared with an analysis of the complaints of 741

children in the control group having similar complaints on examination and reëxamination one year later, the following conclusions were made:

1. Tonsillectomy offers a child considerable relief from such common complaints as sore throat, head colds and mouth breathing. It reduces malnutrition and promotes disappearance of enlarged cervical glands.

2. Complaints have been relieved in 91 per cent of our group of cases operated on. We should not be unmindful of the fact that tonsillectomy is a surgical procedure and has its possible dangers and complications. However, in the group of cases operated on in our County Tonsil Clinic no fatalities have occurred.

3. Comparison of the results obtained from a study of the different age groups clearly indicates that in order to obtain the maximum benefit the child should be operated on in early childhood.

4. Children with subnormal mentality and retarded school progress due to enlarged tonsils and adenoids showed improvement in 40 per cent of all cases operated on.

5. In our series of 736 cases, coexisting conditions were present in 120 cases. The conditions should not be considered as contraindications for tonsillectomy, with the exception of cases of pulmonary tuberculosis which must be very carefully studied before operation is decided upon.

6. Complaints in the control group of cases do not show any improvement during the period of one year of observation as compared with 91 per cent of improvement shown in the group of cases operated on.

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ACKNOWLEDGMENTS: The writers are indebted to Dr. C. H. Benning, Onalee Whipple, Martha G. Murphy and the school nurses of the Oakland County Department of Health, Kathleen Neeley and others for assistance involving much overtime work in the school survey and tabulation of findings.

The Minimal "Chlorine Death Points" of Bacteria*

II. Vegetative Forms
III. Spore-Bearing Organisms

FRED O. TONNEY, M. D., F. A. P. H. A., FRANK E. GREER, F. A. P. H. A., AND GEORGE F. LIEBIG, JR.

Bureau of Laboratories and Research, Department of Health, Chicago, Ill.

THE results of continued tests on vegetative forms and on the common spore-bearing bacteria are presented in this paper, with a more detailed description of the technic employed.

TECHNIC

Preparation of the Chlorine Solutions—Double distilled water in a pyrex or Jena flask was saturated with chlorine gas from a tank of liquid chlorine made by electrolysis for the treatment of water supplies.† From this, five stock solutions were made, containing 10, 50, 100, 200 and 500 p.p.m. These were stored in brown glass stoppered bottles in an icebox and restandardized every 2 weeks.

From the stock solutions the experimental dosage solutions were prepared with double distilled and sterilized water in 250 c.c. pyrex or Jena flasks. The initial quantity of water in each flask was 150 c.c. Fifty c.c. were removed for the chlorine absorption test of the glassware and water. The remaining 100 c.c. portions of the dosage solutions were used in duplicate for exposure of the bacteria under test. One flask was tested bacteriologically and the other used for determination of the residual chlorine. Usually there was no material difference between the dose of chlorine introduced and the residual amount found, and the latter was, therefore, the amount recorded for the bactericidal experiment.

The chlorine absorbing properties of the water and glassware were determined just before the test proper by treating 50 c.c. of the water in each flask for 5 minutes with 0.3 c.c. of a stock solution of chlorine containing 60 p.p.m. After 5 minutes, ½ c.c. of orthotolidin solution was added and the resulting color compared with standards. The water treated as above received 0.36 p.p.m. of chlorine. The amount

* This paper supplements an earlier report on the subject.[2]

† Obtained from Wallace and Tiernan, Newark, N. J.

of chlorine absorbed was usually negligible. If there was material absorption of chlorine by the water and glassware, the set was discarded. In no case were flasks giving a final content of less than 0.25 p.p.m. used in the experimental work.

The glassware was first carefully cleaned with sulphuric acid + potassium dichromate, and then rinsed several times with distilled water. The Nessler tubes used for the chlorine determination by the orthotolidin method were of uniform shade and selected carefully to give equal depth of solution. After each experiment they were rinsed thoroughly, filled with distilled water, and allowed to stand in this condition until again needed. Some lots of glassware were found to absorb appreciable amounts of chlorine and these were eliminated.

Method of Chlorine Determination—For the more concentrated solutions (above 5 p.p.m.), the iodine thiosulphate method was used as follows:

> Twenty-five to 100 c.c. of the sample were diluted if necessary to 100 c.c. with the tested double distilled water, and to this solution 5 c.c. of potassium iodide (150 gm. per liter) and 1 c.c. of a solution of equal parts glacial acetic acid and water were added. The mixture was allowed to stand in a dark place for 10 minutes. It was then titrated with N/40 sodium thiosulphate to a straw-yellow color, when 1 c.c. of starch reagent was added and the titration finished.

For solutions containing less than 5 p.p.m. the orthotolidin method[2] was used. The color standards were made from copper-sulphate and potassium dichromate solutions.

Procedure of Bacterial Exposure—The technic of determining the "chlorine death points" of the organisms was essentially the same as that given in the previous report.[1] Nutrient agar plates were used for growing most of the strains, but special mediums were employed when necessary to secure growths. The Gram-negative cocci here included were grown on the modified Torrey's medium described by White and Pope[3] for cultivation of the meningococcus.

The tests were carried out by adding approximately 100 to 300 organisms per c.c. to the contents of each of two flasks containing 100 c.c. of double distilled water which had just been tested for chlorine absorption. From one flask, 1 c.c. was planted to determine the number of organisms present, then a definite amount of free chlorine was added to each. One was tested for residual chlorine immediately after the experiment; the other flask was used for determining the rate of destruction of the organisms and the time required to kill. To do this 1 c.c. of the contents was plated at intervals of 10, 15, 30, 45 and 60 seconds. The plates were poured immediately, incubated for

48 hours at 37° C., the organisms counted, and the rate of destruction and time required to kill noted. It was found that 48-hour incubation was usually necessary, because in some instances colonies appeared after 48 hours on plates which in 24 hours had no visible growth.

RESULTS

II. VEGETATIVE FORMS

A brief summary of the previous work on vegetative cells is here included.[1] Two hundred and thirty-five strains, comprising 23 species, were tested. A large percentage of these strains were killed by 0.1 p.p.m. of free chlorine, in 15–30 seconds. None survived 25 p.p.m. *B. coli* stood out as in general the most resistant, and was deemed most suitable for use as an "index organism" of effective disinfection of vegetative cells by chlorination.

We have since chlorinated 126 additional strains including 8 new species, the results of which are summarized in Table I.

TABLE I

DOSAGE OF FREE CHLORINE REQUIRED TO KILL VEGETATIVE CELLS OF BACTERIA IN 15–30 SECONDS

Chlorine p.p.m.	Species	No. of Strains	Chlorine p.p.m.	Species	No. of Strains
0.10	*B. aërogenes*	28	0.15	*B. aërogenes*	9
	B. fecalis alkaligenes	5		*B. coli*	5
	Gonococci	7		Meningococcus	1
	M. catarrhalis	3		Non-lactose fermenting bacteria from water	14
	Meningococci	25			
	B. mucosus capsulatus	4	0.20	*B. aërogenes*	4
	Non-lactose fermenting bacteria from water	18		Non-lactose fermenting bacteria from water	3
	V. cholerae	3			
				Total strains	126

Most of the vegetative strains, regardless of species, were killed by 0.1 p.p.m. of free chlorine. A few survived 0.15 p.p.m., and none required more than 0.20 p.p.m. for their complete destruction. Three hundred and sixty-one vegetative strains * have been tested, representing 32 species and including the more common pathogens. The later findings support our earlier conclusion that *B. coli* is probably the organism best suited for use as a criterion of effective chlorination of water supplies, swimming pools, dairy equipment, dishes and other utensils.

* Including previous work.[2]

SPORE-BEARING ORGANISMS

One hundred and forty-two strains of 17 species of spore-bearing organisms were studied. These, which included the more important pathogens and non-pathogens of both aërobic and anaërobic types, are shown in Table II.

The anaërobes were all grown in liquid beef heart medium except *Cl. botulinum A., Cl. botulinum B., Cl. sporogenes* and *Cl. welchii*, which were plated in the sulphite-glucose-iron agar of Wilson and Blair.[4]

B. aërosporus was grown on lactose agar. The other aërobes were grown on plain agar.

TABLE II

DOSAGE OF FREE CHLORINE REQUIRED TO KILL SPORES OF BACTERIA IN 15–30 SECONDS

1. Anaërobes

Chlorine p.p.m.	Species	No. of Strains	Chlorine p.p.m.	Species	No. of Strains
1.0–2.5	*Cl. welchii*	25	25.0	*Cl. botulinum*	2
15	*Cl. tetani*	1		*Cl. tetani*	1
	Cl. botulinum A.	1		*Cl. chauvei*	1
	Cl. chauvei	1	30.0	*Cl. sporogenes*	1
	Cl. sporogenes	1	35.0	*Cl. chauvei*	1
17.5	*Cl. sporogenes*	18		*Cl. oedematiens*	1
	Cl. botulinum B.	4	40.0	*Cl. tetani*	1
18.0	*V. septique*	1			—
20.0	*Cl. sporogenes*	1			61

2. Aërobes

Chlorine p.p.m.	Species	No. of Strains	Chlorine p.p.m.	Species	No. of Strains
18	*B. aërosporus*	28		*B. cereus*	2
45–65	*B. anthracis*	6	160	*B. subtilis*	4
66–85	*B. anthracis*	21	190	Unidentified spore bearers from sewage	6
	B. megatherium	4			
86–100	*B. anthracis*	5	280	*B. vulgatus*	1
	B. mesentericus	1			—
135–150	*B. mesentericus*	1			81
	B. brevis	2			

There was wide variation in the amount of chlorine required to kill various species of spore-forming bacteria. For complete destruction, the anaërobes required a range of concentrations from 1.00 p.p.m. for the least resistant, *Cl. welchii,* to 40 p.p.m. for a strain of *Cl. tetani.* The aërobes required a higher and wider range of chlorine concentrations, varying from 18 p.p.m. for *B. aërosporus* to 280 p.p.m. for a strain of *B. vulgatus.*

DISCUSSION

These results demonstrate the futility of attempting to kill spore-bearing bacteria by use of chlorine in waterworks practice or in other phases of practical disinfection. The many times larger dosage of chlorine required to kill spores as compared to vegetative cells (10 to 1,100 times) would render the cost prohibitive, and cause a highly objectionable taste and odor in water supplies. Moreover, such excessive dosage seems unnecessary, since the essential purpose of the disinfection is the destruction of certain common pathogens of intestinal or respiratory origin, which belong to the group of vegetative forms, of which *B. coli* is the generally accepted group representative.

Should it be desirable under special circumstances to rely on the destruction of a member of the spore-bearing group as evidence of disinfection of spores, probably *B. subtilis* would be most suitable and safest to use. Its chlorine "death point" of 160 p.p.m. is higher than that of the common pathogens of the spore-bearing group and about 600 to 700 times that of *B. coli*.

In the light of the above findings, discretion should be used in adjusting the dosage of chlorine in water supplies on the basis of the gas tests, when lactose fermenting spore bearers are present. These organisms, which are widely prevalent in nature, require for their destruction amounts of chlorine ranging from 2.5 p.p.m. for *Cl. welchii* to 18 p.p.m. for *B. aërosporus*, or from 10 to 70 times that required by *B. coli*. *B. aërosporus* is so resistant to chlorine that its destruction in a water supply by chlorination cannot reasonably be expected.

Probably a residual chlorine dosage of 0.25 p.p.m., equivalent to the chlorine "death point" of *B. coli*, would be a safe margin to carry in water supplies under ordinary circumstances. In other words, the principle seems sound to require as a margin of safety, an excess of chlorine equivalent to the minimal "chlorine death point" of *B. coli*, after the primary chlorine demand of the water is satisfied. The same principle seems applicable to swimming pools; i.e., that 0.25 p.p.m. of residual chlorine would be a safe margin. This amount, if consistently maintained, should give assurance of the destruction of the common pathogenic bacteria here studied, which might reasonably be expected to find their way into water unless the conditions are very exceptional.

SUMMARY

In this and a preceding investigation, the "chlorine death points" or minimal amounts of free chlorine required to kill in 15–30 seconds were determined for 503 strains of 48 species of bacteria. The experimental conditions were adjusted to exclude as nearly as possible chlo-

rine absorbing factors other than the organisms, so that the relative resistance of the organisms to free chlorine would be indicated.

From the standpoint of resistance to chlorine, the bacteria studied fall into two major groups, (1) vegetative cells, and (2) the spore-bearing organisms. The vegetative group, including the common pathogens of both intestinal and respiratory origin (exclusive of the tubercle bacillus), were killed by small doses of free chlorine, i.e., 0.15 to 0.25 p.p.m. in 15 to 30 seconds. *B. coli* was found to be in general somewhat more resistant to chlorine than the other vegetative forms and was considered to be a suitable "index organism" for use as a criterion of effective disinfection by chlorine.

The spore-bearing group was found to be from 10 to 1,100 times more resistant to chlorine than the vegetative forms. The "chlorine death points" of spores ranged from 2.5 p.p.m. for *Cl. welchii* to 280 p.p.m. for *B. vulgatus*. *B. subtilis*, with a "chlorine death point" of 160 p.p.m., was considered to be probably best adapted and safest for use as an "index organism" of the spore-bearing group.

The wide divergence, however, in the resistance of spores on the one hand, and of vegetative cells on the other, suggests that in practical disinfection by chlorine, the attempt to secure consistent elimination of spore-bearers is futile, and serves to emphasize the primary purpose of such disinfection, which is, generally speaking, to safeguard against a relatively few pathogens of intestinal and respiratory origin belonging to the vegetative group. Considering these primary objects, the regular and consistent destruction of *B. coli* appears to afford a more suitable practical criterion of effective chlorine disinfection, than would a spore-bearing "index organism" such as *B. subtilis* or a total bacterial count which would be unduly affected by excessively resistant spore-bearing organisms of little sanitary significance.

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Health Records of School Children in France

THE educational authorities of the city of Paris have decided to introduce into the public schools a system of individual health records which will permit regular supervision over the physical development and health of the children. The health records will be introduced in the elementary schools.—*Paris Méd.*, Feb. 1, 1930, p. XXV.

The Sanitary Aspects of Refuse Collection and Disposal*

FOUL odors are not now believed, as they once were, to be a direct cause of disease, but there is a growing appreciation of the fact that they indicate the presence of filth, and that filth is concomitant with a high incidence of disease and mortality. Civilized communities are therefore demanding greater freedom from what are generally termed "nuisances" in their various forms, offensive to sight or smell.

The sanitary aspects of the several steps involved in the handling of municipal refuse are here discussed:

I. HOUSE PREPARATION

The separation of garbage, combustible refuse, glass, metals and ashes depends upon the method of disposal. Separation at the source should conform to the method of collection. In exceptional cases, where separation at the source is impracticable, this may become a factor affecting the method of disposal.

Garbage—Garbage should be drained before putting it in the receptacle from which it is collected. Where local conditions indicate an advantage in wrapping the garbage in paper after draining and before putting it in the collection receptacle, this may be done. It should only be made compulsory after a study of local conditions and taking into account the method of final disposal to be employed. Garbage should not be wrapped if it is to be treated by the reduction process; nor if it is to be fed to hogs, since it will produce a very unsightly litter and add to the residue for final disposal at the feeding grounds. On the other hand there is a certain advantage if the garbage is to be incinerated and greater ease in keeping the cans clean.

Practically, whatever advantage there may be in wrapping garbage may be obtained by using a small garbage container supported on a swinging arm beneath the kitchen sink. This has an inner receptacle with a perforated bottom which does not reach to the bottom of the outer and water-tight container. If the garbage is properly handled before and while being placed in the inner container, very little moisture will go through. Whatever does may be emptied in the kitchen sink. The house container should be emptied in the outside collector-can and washed at least once a day.

Another simple type of container that has been found generally satisfactory for draining garbage is a small enamelware vessel with perforated sides and bottom, about 3″ deep, in the shape of a quarter section of a circle so that it may be placed in one corner of a sink. It is usually provided with three short legs about ½″ long.

For multi-family houses with janitor service for removing the garbage of each

* Report of Committee on Refuse Collection and Disposal, presented to the Public Health Engineering Section of the American Public Health Association at the Fifty-eighth Annual Meeting at Minneapolis, Minn., October 1, 1929.

family to the outside collector-can the foregoing rules and comments may need modification to meet local conditions.

Receptacles for holding garbage at houses and other buildings before it is taken away by the collector should be of metal, with metal covers, watertight and flyproof. They should be placed at some point readily accessible to the collectors, who should preferably come to the house for the garbage can instead of requiring the householder to take the can to the street.

The collection can should be kept covered, to exclude flies and other vermin, and rain water, and should be so placed that it will not be tipped over by dogs or other animals.

In some cases an ordinance requiring covered and water-tight cans has been difficult to enforce. In such cases the city may provide the cans, the cost of which should be considered as part of the cost of collection and not charged against the householder, as he might then be deterred from accepting the service of removal. The can, replaced by a clean one, is taken to the point of disposal or to a transfer station, where it is washed with hot water and disinfected if necessary.

If the contents of the collection can are kept dry by draining at the kitchen sink and by excluding rain water, the danger of offensive odor is reduced. If odors do occur, they can be remedied by the householder by occasional washing or other cleaning of the cans, and if necessary, the use of a deodorant and, on the part of the city, by prompt removal.

Ashes—Metal cans, of a size appropriate for the collection service, should be used as house receptacles for ashes. Economy to the householder and efficiency in the collection service demand that the cans be strong. No garbage or other decomposable organic matter or waste paper should be placed in the ash cans. Waste glass may be permitted in some cases.

Tins, Cans, Metal, Glass, Paper and other Combustible Refuse—Preferably these materials, if not too bulky, should be placed in strong metal receptacles, or else—except glass or sharp metals—in stout canvas bags. Large metal refuse, boxes and cartons may be collected without placing in receptacles. If disposed of by incineration, heavy metals and glass should be excluded.

Single Mixed Collection System—Where garbage, mixed with ashes, glass, cans, paper and miscellaneous wastes generally are collected together, the house treatment will be similar to that for garbage. Where garbage is not included the house treatment will conform to the treatment for ashes.

On collection days the householder should put the containers out at some place readily accessible for the collectors. The exact place may vary with local conditions, single or multiple family dwellings, size of lot, position of house on lot, accessibility of rear yard, if any, presence or absence of alleys, but in general the preferable plan is to set the containers as near as may be to the street or alley entrance to the rear or side yard, leaving to the collectors the emptying or removal of the container and its return to the house.

II. TRANSPORTATION

The collection of municipal refuse and the method of disposal are closely connected and should be considered as a single problem. In some cases all classes of refuse are collected combined; in others they are collected and disposed of separately; and in still others they are collected and disposed of in part separate and in part mixed. In cases where part of the refuse is disposed of by incineration, the garbage and inflammable refuse may be mixed.

The collection of house refuse may be also classified as municipal, contract, and private. In municipal collection the refuse is collected by teams or trucks and employees of the municipality. In contract collection the refuse is collected by the employees and equipment of a private firm under contract. In some cases the refuse is collected by private individuals who are usually licensed by the municipality. There are also instances where the refuse is collected by the municipality and disposed of by contract and *vice versa*. It has been found that the sanitary features have sometimes been neglected under private and contract collection and disposal of refuse and that nuisances are often created, but this is not necessarily so with a properly prepared contract and specifications and strict supervision over the work.

The wagons or trucks in which the garbage is collected should be provided with smooth, water-tight metal bodies to prevent dripping or with metal barrels or containers. Wooden bodies or barrels should not be used as they absorb moisture from the garbage and soon become foul smelling and insanitary. For convenience in loading they should be hung as low as practicable. The metal bodies or barrels should be washed and disinfected daily and kept in good repair. While making collections, the wagon or receptacles should be covered to prevent spilling and the spread of odor. The service should be reliable and capable of expansion so that collections need not be delayed. It is advantageous to have the transport of the collected material as rapid as consistent with safety, as it reduces the time the loaded vehicles are on the street. In this respect truck transport is the best and horse-drawn transport the worst. The routing should be worked out so as to cause the least nuisance.

III. DUMPING ON LAND AND BURYING

Dumping on land is the simplest and most convenient method of disposal, but it is the method that most frequently results in a nuisance, and should therefore be carried out with great care and discrimination and under municipal control.

Ashes, including metals, glass and crockery, and containing not over 2 per cent of organic matter, may be profitably used in filling in low land or disposed of in dumps if remote from habitations and main lines of travel, where the dust may prove objectionable. Paper, boxes, etc., should be rigidly excluded, for they present an unsightly appearance and contain sufficient organic matter to invite the breeding of flies and the propagation of vermin, permit the dissemination of disease germs and, by burning, create far-reaching, pungent and offensive odors that under favorable conditions have been observed at a distance of 6 miles or more. This is a most prevalent source of nuisance in the outskirts of cities and one that calls for energetic measures for control.

Where other means of disposal are not provided, dumps of mixed refuse should be made, where the depth of fill exceeds 8′ or 10′, in layers not over 6′ in depth. The garbage should preferably be deposited at the bottom, covered with rubbish and finally with ashes. Unless soil or other suitable material is available a sufficient amount of ashes should be allowed to accumulate during the winter to serve for this purpose during the summer months, when the proportion of ashes is small as compared with the garbage. The exposed fresh material at the face of the dump should be covered with at least 4″ of soil or clean ashes at the end of each day during warm weather. Where necessary a temporary fence should be provided or other arrangements made to intercept papers that would otherwise be scattered by the wind. If active or smouldering fires occur, these should be im-

mediately extinguished, for which, in the case of extensive dumps, an ample and properly distributed supply of water should be provided. After getting headway such fires are very difficult to put out.

Refuse dumps should be in remote locations. They should not be made along the banks of streams, as is quite customary, for, aside from esthetic reasons, the impurities leaching or washing off into the water during storms add to its pollution and consequent injury for purposes of water supply, fish culture and recreation.*

Burying in trenches is generally limited to garbage. As the area required is large and as considerable labor is involved it is not practiced extensively. Otherwise it has been found generally satisfactory in small communities, especially where the soil is loose and sandy. Since decomposition is dependent upon the aerobic soil bacteria the garbage should not be buried so deep that the air cannot readily reach it. It is also important that it should not be buried below ground water level, in which case decomposition would be greatly retarded. To prevent putrefactive odor and the propagation of flies garbage should be kept as dry as possible. To prevent dissemination of germs by the wind it should not be dry if exposed. Exposure to the weather is, therefore, in any case objectionable.

The trench is usually about 3′ wide and 12″ deep. The garbage is spread in 6″ layers and immediately covered with 6″ of earth. For winter use 10′ or 15′ of trench should be prepared in advance for each ton of garbage expected. Care should be taken in providing ample cover to prevent dogs, rats, etc., from getting at the garbage and scattering it about.

Disposal by burying in trenches is more sanitary and less liable to create a nuisance than dumping, while utilizing the fertilizing value of the garbage. When this method is employed for garbage the rubbish may be incinerated or used with ashes as fill, in which case all boxes and cartons should first be broken up.

IV. DUMPING AT SEA

The dumping of garbage at sea is carried out by some 6 or 8 English cities, by Victoria, B. C., and in this country by Oakland, Calif., Newport, R. I., and in part by New York. It is often the cheapest method for seaport towns favorably situated, but open to the objection that landward winds bring much of the floating material to shore, even from long distances, where it litters the beaches and injures them for bathing and other recreational purposes. For this reason this method was abandoned by the City of Seattle in 1904, whose garbage was dumped in Puget Sound; and in New York incineration is being substituted.

Ashes and other heavy refuse are commonly and satisfactorily disposed of by dumping at sea, subject to federal control, but unless crates, laths and other light materials are carefully separated and removed, there remains an unsightly residue on the surface that is liable to litter up the beaches.

V. INCINERATION

Incineration provides one of the most sanitary methods of refuse disposal, if the incinerators are properly designed, constructed and maintained. There has

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* In a recent case, officially reported, "the result is that residents in the vicinity of the stream deposit all household garbage as well as every other kind of rubbish and waste . . . in its channel. During the warm months of the year it is a shocking spectacle and it is alleged the odor at times is so bad that residents have to leave their houses."

"An official of one community, through which runs one of our finest rivers, very frankly stated to a representative of the Commission that the customary method of garbage disposal was to empty the garbage cans at night from the bridge over the river."—*1st Bien. Rep.*, Conn. State Water Com., 1925–1926.

been a noticeable trend toward incineration during the past few years which should result in the gradual reduction of offensive refuse dumps on the outskirts of cities and villages. The movement started by many villages to construct an incinerator on a coöperative plan is to be encouraged.

One of the most important factors to be considered in connection with the establishment of an incinerator, from an economic as well as from a sanitary standpoint, is its location. Since incineration is rarely a revenue producing means of disposal, the location of the incinerator near the center of the garbage production area is desirable, to offset the economical advantages of other systems. The site selected should not be in a residential section, or where a nuisance will be caused by the congregation of vehicles and apparatus in the vicinity. The incineration plant should not be located in a ravine, where the hills above the plant are built up with residences; for it has been found that where homes are at practically the same elevation as the top of the stack of the plant, at times nuisances may be created by odors before dispersion into the atmosphere can take place. This is particularly true at times when the incinerator is being put in operation.

It is of the utmost importance that careful attention be given to the design and construction of the incinerator itself. Owing to the strong competition among manufacturers, important parts in the design which are necessary for proper operation from a sanitary standpoint, may be omitted in order to compete with manufacturers selling an inferior product. Often a real reason behind this may be loosely written specifications. Attention is called to a report of this committee for the year 1925.[1] Among the most essential features which should be considered for sanitary reasons are a combustion chamber of suitable size and arrangements to facilitate combustion and arrest dust; provision of sufficient pre-heated air with forced draft to maintain high temperatures; and a sufficiently high stack to carry off and disperse the products of combustion.

The operation of the plant is most important. No matter how well the plant may be designed and constructed, unless it is carefully operated and maintained, nuisances may result. The charging chambers should not be overloaded; in other words, the plant should be sufficiently large to allow for flexibility of operation. A minimum combustion chamber temperature of 1,250° F. should be maintained, and the average should be 1,400° F., or even higher for some types of plants, in order to give complete combustion. This is essential to the prevention of objectionable odors.

The addition of fuel to garbage, if required to effect combustion, is one of the drawbacks of the incineration method. If sufficient rubbish can be collected, it may not be necessary to add other fuel. A mixture of at least 35 per cent of rubbish by weight with 65 per cent of garbage is usually necessary to insure proper burning. At one of the large cities in the central part of New York State, waste crank-case oil is collected in drums and used in the furnaces when large quantities of waste vegetables, such as celery and cabbage, are received in truck loads from wholesale merchants. This has been found very useful at such times and it also serves to keep this objectionable oil out of the public sewer system.

The incineration plant and its surroundings should be maintained in a sanitary condition at all times. The garbage should be handled as rapidly and as uniformly as possible so that no large accumulations exist. This will prevent nuisances from odors as well as from flies. No dirty vehicles nor apparatus should be left around the plant and the floors and walls of the building should be kept clean.

VI. HOG FEEDING

Hog feeding has the advantages of utilizing the food value of garbage, and of potential profit from the sale of pork. A large initial investment is necessary, however, and there is danger of heavy loss from sickness in the herds. Unless rigidly controlled this method is subject to nuisance. It provides disposal for garbage only, ashes and rubbish being taken care of as before described.

Piggeries should be maintained only in places very remote from habitations even when properly supervised and with every precaution to prevent a nuisance. The hog houses or shelters should be cleaned daily and the cleanings disposed of in a sanitary manner, such as by burial or by plowing into the ground as fertilizer. The residue from hog feeding often amounts to about half the weight of the garbage. Attempts to produce fertilizer of the residue by drying and grinding have only been partially successful.

At least 100 hogs are necessary to dispose of 1 ton of garbage per day.

There are two methods of feeding: upon platforms and upon the ground. If platforms are provided, they should be of concrete. These are preferably enclosed in a building, thereby preventing the spread of odor and providing shelter in winter. The uneaten garbage should be hauled and buried and the platforms cleaned daily. Hogs should be fed upon the ground only where a large area is available so that the place of feeding may be changed often. The top soil should be plowed under frequently. Manure and other residue should be removed at regular intervals and the yards kept in as sanitary a condition as possible. It has been found difficult to maintain large piggeries without creating serious nuisance, except in the most remote places.

To avoid losses from death all hogs on arrival should be immunized against hog cholera. The garbage fed to them should be fresh, and care should be taken to eliminate razor blades, victrola needles and broken glass. Even with care losses from such things will probably amount to from 3 to 5 per cent annually. Hogs will consume from 12 to 30 (average 20) lb. of garbage and take on an average weight of 1 lb. per day each, or about 40 lb. per ton of garbage. To keep down the nuisance of flies a mixture of 4 lb. cresol, 4 lb. oil of Myrbane in 48 gal. of stove distillate, sprayed twice a day (being careful to avoid spraying the hogs themselves), has been found efficacious.

There seems to be no foundation for the common belief that garbage fed pork is less wholesome than grain fed pork. "With proper management the meat produced is equal to and cannot be distinguished from grain fed hogs."[2] It is true, however, that the grain fed hog increases somewhat more rapidly in weight.

VII. REDUCTION

As in the case of hog feeding, reduction and fermentation processes are applicable to garbage only, which should therefore not be wrapped at the source.

Reduction processes possess merit in the conservation of the grease and the fertilizer ingredients as separate merchantable products. Methods vary in detail, but as generally carried out the garbage is cooked in a digester by steam, freeing the grease with or without a solvent, such as naphtha, and then the residue, known as tankage, is pressed. The drainage or "stick liquor" flows to a tank where the grease is skimmed off and any grease left in the tankage is removed by percolating with solvent and recovered. The tankage is then ground as fertilizer. The stick liquor is sometimes used to enrich the tankage but whatever is discharged is highly putrescible and requires ample dilution.

Owing to the fluctuation of market prices for grease and tankage the revenue cannot be closely predicted. With large, well-conducted plants a profit may be realized, but with the prices that have held since the war a net revenue has been exceptional. For this reason and the fact that reduction plants are expensive to construct and maintain and generally result in a greater cost for haul than incinerators (as they are most economically operated in large units), and also because they are more liable to nuisance, few plants have been built in recent years.

The greater probability of nuisance is due to drainage of the stored raw garbage and in general to the greater difficulty in keeping the plant clean, but especially to the liability of offensive gases to escape during processes of percolation and drying, and from leaky pipes and fixtures. The waste liquor too is apt to contain more or less offensive putrescible material mixed or combined with solvent, setting free obnoxious odors that have been discerned at a distance of 8 miles. So far as possible, however, the solvent is recovered and used over again.

In the best modern plants, where no solvent is circulated in a closed system, and with care in operation, these odors can be controlled, and the plant may be centrally located without offense.

Reduction plants require careful supervision, and revenue should be of secondary consideration. For this reason they should be operated by the municipality. They are generally not to be recommended for towns of less than 80,000 inhabitants.

VIII. FERMENTATION

The fermentation of garbage, developed in Italy as the Beccari System, has the advantage of requiring a minimum of mechanical equipment and attendance. It appears to have been very successful in some of the larger Italian cities, but with the different quality of American garbage certain modifications appear to be desirable to reduce the moisture and to promote decomposition with freedom from odor. Experience in America is too limited to specify details, but it appears entirely practicable to obtain a fairly dry, innocuous product within 40 days' decomposition by providing ample aeration in the cell and by the addition of about 30 lb. calcium oxide and 1 lb. ammonium sulphate per ton of raw garbage. The weight of the humus produced is about 12 per cent of that of the raw garbage, and, after a few hours' air-drying, can be ground and sold as fertilizer.

By this program, odors which were formerly found objectionable on drawing the charge are avoided.

The process has the merit of conserving the fertilizing properties of garbage, freedom from odor, elimination of harmful bacteria (by the heat evolved), and of inexpensive construction and operation. On the other hand the space required renders it less favorable for large cities with high land values than for suburban communities and small towns.

IX. SUMMARY OF CONCLUSIONS

House Preparation

1. Refuse should receive the proper degree of separation.
2. Garbage should be drained. If it is to be incinerated, it may be wrapped.
3. Receptacles should be of metal, water-tight and fly-proof. They should be kept covered, placed at the properly designated point of collection and cleaned to prevent odor.
4. Cans, metal and glass may be placed with the ashes in metal cans, but

paper should be excluded. If not too bulky, paper, cans and metals without sharp edges may be collected in stout bags of canvas or burlap. Mixed refuse should be treated as provided for garbage; but if without garbage, it should be treated as provided for ashes.

Transportation

1. Any scheme of collection should be correlated to the length of haul, the method of disposal and whether refuse is combined or separate.
2. Garbage and inflammable refuse may be mixed if disposal is by incineration; otherwise separate collection is preferred.
3. Unless contractual conditions are carefully drawn municipal collection and disposal is desirable.
4. Wagons or trucks and containers should be of metal and washed or disinfected daily.
5. The bodies of wagons or trucks should be hung as low as practicable for convenience, and provided with covers.

Disposal on Land

1. Ashes, metals, glass and crockery may be dumped on land, but paper, boxes, etc., should be separated out and all fires extinguished.
2. Dumps of mixed refuse, where necessary, should be made with garbage at the bottom, ashes on top and the exposed surface promptly covered with at least 4″ of earth.
3. Dumps should be located at remote points and not along the banks of watercourses.
4. Garbage may be buried in trenches 12″ deep to a depth of 6″ and covered with at least 6″ of earth.

Dumping at Sea

This is a satisfactory method of disposal for ashes and other heavy material provided that all wood and other nonsinkable material is carefully excluded, but it is not desirable for garbage.

Incineration

1. The incinerator should be placed in an industrial location but not in a ravine, where the gases of combustion might reach habitations.
2. To avoid the use of fuel the charge should consist of at least 35 per cent rubbish by weight with 65 per cent garbage.
3. Combustion chamber temperatures should be maintained above 1,250° F., and average at least 1,400° F.
4. The plant and its surroundings should be kept in a clean condition.

Hog Feeding

1. Piggeries should be located at a distance from habitations.
2. The hog houses, grounds and feeding platforms should be kept clean and all refuse promptly removed and plowed under or buried. Feeding platforms should, if possible, be enclosed.
3. Garbage fed to hogs should be free from injurious substances and in a fresh condition.
4. All hogs should be inoculated on arrival for hog cholera.
5. Flies should be kept from breeding by the application of suitable chemicals as a spray or otherwise.

Reduction

1. The raw garbage should be drained but not held in storage long enough to putresce.
2. The solvent or drainage liquors containing solvent mixed with organic matter should not come in contact with the outside air.
3. Reduction plants require intelligent supervision. Care should be taken to keep the plant in a clean condition and to repair all leaks and other defects without delay.
4. Reduction plants should only be considered in the case of large cities.

Fermentation

1. Fermentation plants require careful design, and intelligence in operation.
2. Fermentation plants may prove, with further experience, adapted to suburban or rural communities, where land is not too costly and where a local market for the product as fertilizer can be assured; but as yet they must be considered as in the experimental stage.

KENNETH ALLEN, *Chairman*
M. N. BAKER
C. A. HOLMQUIST
EDWARD D. RICH
SAMUEL A. GREELEY *
W. T. KNOWLTON

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* Concurring in all general matters.

Argentina League of Mental Hygiene

THE Argentinian League of Mental Hygiene was established in Buenos Aires on December 6, 1929, through the influence of the Society of Neurology and Psychiatry. The League will study and put in practice means for the prevention of mental disorders. It will work for the application of mental hygiene in schools, industrial establishments, and other places, and for the improvement of the methods of treating mentally ill persons. It is hoped that these aims will be realized through the organizing of congresses and conferences and the enlisting of the cooperation of the public authorities.—*Semana Med.*, Buenos Aires, Jan. 30, 1930, p. 320.

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SERUM TREATMENT OF MENINGITIS

THE use of antimeningococcic serum for the treatment of cerebrospinal meningitis is an accepted procedure, the usefulness of which is generally admitted. There are, however, rumors and even published reports[1] that antimeningococcic serum is not accomplishing all that might be desired. In the epidemic reported by Anderson two of the serums employed (one of which was produced by a state laboratory) appeared to be of definitely more value than others which should have been of equal excellence. This should not imply laxity on the part of any or all of the commercial manufacturers but is, rather, a reflection on our lack of adequate laboratory methods for determining in advance the therapeutic activity of these serums.

Determination of the potency of antimeningococcic serum is now based almost entirely on its content in agglutinins (or complement-fixing antibodies) for certain type strains. This method is preferred to others largely because of its simplicity and because the results obtained with it can be readily repeated. Other methods, some of which involve the use of animals, have been suggested but are not widely employed. There is, in truth, no reliable method at present available. To quote Dr. McCoy, "There is hardly any more unsatisfactory standardization in connection with biological products than the present-day standardization of antimeningococcus serum."

One point of value in treating meningitis cases is that a patient who is doing poorly under treatment with one batch of serum may improve under treatment with another batch. It is not always necessary to obtain the product of a different manufacturer, for it will

sometimes happen that, of two lots made by the same manufacturer, one will be more efficacious than the other, in an individual case. Better results may be obtained if the infecting organism is isolated and tested for agglutinability by samples of several batches of serum; and then treatment is continued with that lot of serum which gives the best agglutination. Some of the cases reported have been so rapidly fatal that no serum could be of any possible value. Cases dying within 24 hours of admission to hospital were almost certainly beyond the aid of serum therapy at the time they entered the hospital.

At the moment, meningitis may still be listed among those diseases deserving further study, particularly from the standpoint of serum therapy. It is reasonable to believe that a well equipped group could expect to improve present methods and suggest means which would restore this serum therapy to at least the level which it attained some years ago and from which it is thought to have receded within the past few years. At present there is danger of the development of a do-nothing attitude which may lead to the abandonment of a reputedly valuable agent.

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HEALTH COUNCILS

SYMPATHETIC coöperation of a constructive and preventive nature has become recognized as essential if community health and welfare organizations are to serve the public most effectively. As the public health program has broadened with the introduction of new lines of service and the emphasis on education in the principles of hygienic living, consideration has naturally been given to the relative values of different health activities. The Health Council plan has developed to meet the local needs for a coördinating and supporting voluntary body of representative public spirited citizens.

The Health Council is usually made up of a lay person and the executive of each private health agency, representatives of public health organizations, and members-at-large. This group constitutes the governing body.

The purposes of the Health Council are primarily as follows:

1. To promote the coördination of public and private health work.
2. To serve as a forum for the discussion of health and sickness problems, policies, and plans.
3. To develop new and to improve present standards of service through joint study of special problems.
4. To secure improvement of existing health facilities and services and the establishment of new or additional health facilities or services where needed.

5. To give moral support to the existing department of health, in coöperation with the local dental and medical societies.

The Cincinnati Public Health Federation was the first city Health Council organized. Such councils are now active in Allegheny County, Boston, Cincinnati, Cleveland, Denver, Louisville, Minneapolis, New Haven, San Francisco and Syracuse. Groups usually connected with a Council of Social Agencies or a Community Chest exist in some 20 cities for the purpose of rendering services somewhat similar to those of the 10 Health Councils. Massachusetts is the only state council formed. The National Health Council, established in 1920, included in its membership 15 national health agencies. It has recently been reorganized as primarily a service organization for purchases, library maintenance, and similar functions.

A primary function of a Health Council is the development of better understanding between the official and private health agencies of a city. Through special studies by executives and committees, many community health problems are carefully analyzed. Child hygiene, health education, mental hygiene, social hygiene, convalescent care, chronic diseases, dental care, public health nursing, tuberculosis, and industrial hygiene are among the problems which have been considered during the past year in an effort to secure sound program planning. Several stimulating public addresses have been sponsored, and important publications have resulted.

SEWAGE AND CONSERVATION

TO a large proportion of our population, the thought of conservation in connection with sewage would seem preposterous, but to a small group, including health and municipal officials and a few industrialists, such is not the case. At the present time one of the problems in the sanitary engineering field receiving much thought and study is how to design a sewage treatment plant that will not only act as a device for innocuously caring for sewage but will at the same time produce some return even if it be more or less intangible.

Sewage farming, among the oldest of the sewage treatment processes, has a conservation phase to it but to a limited extent. The application of sewage to land not only in the negative light of using the land to dispose of the sewage but also in the positive way of utilizing the sewage to fertilize the land has been practiced for many years. In the sections of this country where water is scarce for agricultural purposes, the application of sewage to the land has served a useful purpose and has permitted the saving of other water more suitable for

higher uses. A recent statement indicates that in arid or semi-arid areas there is a decided tendency to turn further to land disposal.[1]

Attempts to use as a fertilizer the sludge which results from the treatment of sewage, both in its natural form and artificially improved, have been numerous. Reports as to the value of untreated sludge as a fertilizer have been conflicting, probably due to the variation in the sludges used. By adjusting the chemical make-up of a sludge as is done at Milwaukee, Wis.,[2, 3] it appears that greater success in its use as a fertilizer can be had. Although there may be no net income to a municipality in utilizing its sludge, such fertilizing value as it may have is not being completely lost.

The first attempt in this country to utilize gas from Imhoff tanks was at the Peachtree sewage treatment plant in Atlanta, Ga., 1915. Since that time this practice has spread widely. In most cases, collected gas is put to some useful work, as at Birmingham, England,[4] and Charlotte, N. C., where it drives gas engines. Efforts are now being directed toward the stimulation of the digestion of sewage so as to produce more gas. This method of conserving an energy producer has merit and will probably go far.

The most recent attempts to get something useful out of sewage have been along the lines of reclamation. The cost of hauling fresh water into the Grand Canyon National Park[5] was a major factor in bringing about a sewage treatment plant design which would produce an effluent suitable for reuse as boiler feed water. It is now reported[6] that a large oil company will attempt to reclaim 6 million gallons of Los Angeles sewage for the same purpose, and that the city of Los Angeles has taken its first step toward the reclamation of some of its sewage to replenish the underground water supply and for industrial uses.

The health of the public benefits through the proper treatment of sewage and if this conservation viewpoint stimulates more sewage treatment, it is acting indirectly as a favorable factor in public health work.

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Cooke Memorial Hospital, Fort Worth, Texas
Considered the most beautiful in the South

THE HOST–CITY FOR 1930

IRA C. CHASE, M. D.

Advisory Council of the Department of Public Health and Welfare, and Vice Chairman, Citizens' Committee, Fort Worth, Tex.

THE next meeting of the A. P. H. A. will convene in Fort Worth, Tex., October 27. You who attend will of course have first interest in the real Association work. When you step from the airplane or Pullman you may be interested to know that you are in a "Town that Jack Built"; that is, a one-generation town, conjured into existence by poor, energetic, virile empire builders. Think of a set of men who can in their lifetime transform a prairie into a city of 200,000 population, build its skyscrapers, pave its 86 miles of streets, erect its hotels and banks, its 57 schools for 35,000 children, 206 churches, 11 hospitals, 19 lines of railway outlet, lay out 43 parks, provide water and sewage systems, colleges, libraries, aviation fields, etc. Look at Fort Worth from this angle.

Fort Worth is about midway between the Atlantic and Pacific Oceans, 323 miles from the Gulf of Mexico, 717 miles south of St. Louis. Its elevation is 670 feet; climate is dry and mild, with a mean temperature of 65.2°; the heat of summer is modified at night by the monsoon winds drawn from the Gulf toward the heated, arid plains of the Northwest. It is one of the most healthful parts of the United States.

In the old days settlers first "fell on their knees and then on the aborigines"; churches and forts were of first importance. A modern settlement clusters about pure water, sewage disposal, health department and hospitals; schools, churches, courts and jails are secondary.

This "Town that Jack Built" is planned in a modern manner, and the result is that Fort Worth has the lowest death rate of the principal cities of the South and ranks third in cities of 100,000 or more in the United States. Great artificial lakes supply filtered and treated water. Extensive sewerage and disposal plants complete the system. A real American Public Health and Wel-

New Methodist Hospital, Fort Worth, Texas

St. Joseph's Hospital, Fort Worth, Texas

fare Department is a part of the City Government. Eleven hospitals provide care, one the most beautiful in the South, another of 400 beds unexcelled in the United States.

Here is the home of the State Medical Association of Texas, with its 3,800 members, and the headquarters of the *State Medical Journal*. Here is a County Medical Society of 180 physicians, all eager to make the meeting of the A. P. H. A. a success.

Within a few hours' ride is the "Heart of the Cow Country," the Swenson ranches, where novelists prepare their material and artists get their poses and inspiration. Here is given the world's greatest rodeo annually. Here is the greatest oil-line center of the world, with 8 refineries, the greatest packing industry in the South, the greatest food distributing point and the largest manufacturing center of the Southwest. Take a look at a "Town that Jack Built." It is an inspiration to an American.

ASSOCIATION NEWS

MEETING OF EXECUTIVE BOARD

A MEETING of the Executive Board of the American Public Health Association was held on April 5 in the headquarters office, with all members of the Board present, together with the chairmen of three of the four standing committees.

Financial Report—The Board received the report of the financial condition of the Association at the end of the first quarter, which showed a total income of $65,167.94, and a total expenditure of $42,250.48, with all committees operating well within the budget allotments.

Section Appropriations—Upon the recommendation of the Finance Committee, the Board approved a budget of $2,000 for expenditures of the sections, this sum to be drawn on by the several section secretaries in accordance with budgets submitted, and for items approved by the Treasurer and Executive Secretary. Authorized expenditures will cover postage, stenographic service, telegrams, long distance telephone calls, and similar expenditures of the secretaries for section business which cannot easily be provided by the administrative office.

Grant from Commonwealth Fund—Upon the recommendation of the Finance Committee the Board accepted a grant of $3,000 from the Commonwealth Fund, to be used for the training of an additional field worker under the Committee on Administrative Practice.

Life Membership Fund—Upon the recommendation of the Finance Committee the Board established a Life Membership Fund to which are to be deposited directly all dues from Life Members, the income from the Fund to be paid into current income of the Association and the capital fund to be held for future disposition by the Board.

Constitution for the Western Branch—A tentative draft of a Constitution and By-laws of the Western Branch of the American Public Health Association was submitted to the Board. Several provisions of this Constitution and By-laws were approved in principal by the

Board, and the Secretary of the Western Branch and the Executive Secretary of the Association were instructed to prepare in consultation a final draft for approval by the Board and the Western Branch members at the meeting in Salt Lake City in June.

Committee on Meetings and Publications—The Board received the report of the Committee on Meetings and Publications which recommended that, following the Fort Worth meeting, there be arranged a trip to Mexico City in response to an invitation from the Chief of the Public Health Service of Mexico, and approved plans for this trip and a scientific program to be arranged in Mexico City.

The committee also reported on the activities of the Sub-committees on Annual Meeting Program and Snydicated Public Health Bulletin.

At the conclusion of his report, the chairman, Abel Wolman, tendered his resignation as chairman of the Committee, expressing his appreciation of the assistance of members of the Executive Board, his committee and the staff.

To succeed Mr. Wolman as Chairman of the Committee on Meetings and Publications, the Executive Board elected C. C. Young, D.P.H., of Lansing, Mich.

Committee on Fellowship and Membership—A report was received from the Committee on Fellowship and Membership outlining its activities in the promotion of sustaining and active membership. The committee announced the appointment of Carl E. Buck, Dr.P.H., as Chairman of the Sub-committee on Membership Promotion.

Committee on Administrative Practice—The report of the Committee on Administrative Practice, presented by Louis I. Dublin, Ph.D., announced completion of surveys and appraisals in Athens and Clarke County, Ga., Rutherford County, Gibson County, and Sullivan County, Tenn., and Washington, D. C. Arrangements have been completed for further surveys during 1930 in Memphis, Tenn., Kansas City, Mo., Fargo, N. D., and Marion County, Ore. The annual consultation service is to be extended as in the past to Detroit, Mich., Monmouth County and Newark, N. J., and Montreal, Canada.

The report indicated that the field work of the study of rural health work will probably be completed in November, and this will include detailed surveys of 50 county health organizations. The first analysis is expected to be completed about June 30, 1931.

The committee reported that 140 cities had been entered in the Health Conservation Contest of the U. S. Chamber of Commerce and, of this, 108 had returned completed schedules. These returns were carefully graded by the Grading Committee on April 4, and recommendations of this committee transmitted to the Board of Judges of the Chamber of Commerce of the United States. Eighty-seven of the cities entered in the contest have received consultant service from the Association.

The Sub-committee on Record Forms is negotiating for the printing of record forms approved by the committee.

The Sub-committee on the Evaluation of Administrative Practice is outlining a program of research and is considering the fields of diphtheria and scarlet fever control for its studies.

The special committee to revise the report on community health organization expects this revision will be completed before the Fort Worth meeting.

Committee on Research and Standards—Abel Wolman, Chairman of this Committee, reported that pending completion of the organization of the committee there was no work to report.

Upon the nomination of Mr. Wolman the following were elected members of

the Committee on Research and Standards:

W. H. Frost, M.D.
Edwin O. Jordan, Ph.D.
Haven Emerson, M.D.
Isidore S. Falk, Ph.D.
George W. Fuller
Prof. Henry C. Sherman
Edgar Sydenstricker
William H. Park, M.D.
Prof. C. E. Turner
Thomas Parran, M.D.
A. Parker Hitchens
L. R. Thompson, M.D.

The chairman requested permission to defer appointment of the two additional members prescribed by the By-laws until such time as the committee has actually begun work, to permit the addition of other members representing the special fields of activity which may be entered.

Report of Secretary of Minneapolis Local Committee—The Board acknowledged receipt of the report and directed the Chairman of the Board to express to the Minneapolis Local Committee the appreciation of the Association for the suggestions for the improvement of future annual meetings.

Committee to Coöperate with the Director of the Census—The resignation of Dr. Chapin as Chairman of this committee was presented and accepted by the Board. Dr. Emerson was appointed Chairman, and George H. Van Buren was appointed to fill the vacancy.

Allocation of Committees—A special committee consisting of Dr. Emerson, Mr. Wolman, and Miss Jean, appointed to consider the allocation of Association and section committees to the four standing committees of the Association, presented its report with a suggested plan of allocation, and this was accepted by the Board and will be brought to the attention of the sections and committees concerned.

Policy on Committee Appointments—Two important matters of policy were definitely decided by the Board, namely, that the staff members of the Association should not be considered to be ineligible for appointment to Association committees, and that those who are not members of the Association may under special circumstances be appointed to Association committees.

Requests for Endorsement—Several requests for endorsement were received by the Board from national and state organizations related to the field of public health, and the Executive Secretary was authorized to express to these organizations that it was not in accordance with the policy of the Association to give such endorsements.

Constitution—The Constitution of the Association adopted at the Minneapolis Annual Meeting was referred by the Governing Council to the Executive Board for editing as to legal terminology, and the edited Constitution was approved by the Executive Board. (This will be printed in an early issue of the JOURNAL.)

Report of Nominating Committee—Dr. Ferrell, the Chairman of the Nominating Committee, presented the report of the committee listing 25 nominees to be voted upon for membership in the Governing Council at Fort Worth.

NOMINATIONS FOR THE GOVERNING COUNCIL

IN accordance with the By-laws of the Association the Nominating Committee reports the following nominations for the Governing Council. The Constitution provides that " upon the petition of twenty-five Fellows, the Nominating Committee shall add the name of any Fellow to this list, providing such petition is received 15 days before the Annual Meeting."

The ten Fellows receiving the highest number of votes or a written ballot cast by the Fellows present and voting at the Annual Meeting in Fort Worth will be elected for the three-year term, 1930–1933.

Fred Adams, M.B., D.P.H., Health Officer, Windsor, Ontario, Medical Officer of Health
John A. Amyot, M.B., Deputy Minister of Health, Ottawa, Ontario
Donald B. Armstrong, M.D., Assistant Secretary, Welfare Department, Metropolitan Life Insurance Company, New York, N. Y.
George H. Bigelow, M.D., State Commissioner of Health, Boston, Mass.
Robert S. Breed, Ph.D., Chief in Research, New York Agricultural Experiment Station, Geneva, N. Y.
Paul B. Brooks, M.D., Deputy State Commissioner of Health, Albany, N. Y.
Francis P. Denny, M.D., Health Officer, Brookline, Mass.
Livingston Farrand, M.D., President Cornell University, Ithaca, N. Y.
J. G. Fitzgerald, M.D., Professor of Hygiene and Preventive Medicine, University of Toronto, Toronto, Ontario
Edward S. Godfrey, Jr., M.D., Director, Division of Communicable Diseases, State Department of Health, Albany, N. Y.
Paul Hansen, Consulting Engineer, Pearse, Greeley & Hansen, Chicago, Ill.
Emery R. Hayhurst, M.D., College of Medicine, Ohio State University, Columbus, O.
Professor William C. Hoad, Professor of Sanitary Engineering, University of Michigan, Ann Arbor, Mich.
Guy L. Kiefer, M.D., State Health Commissioner, Lansing, Mich.
J. H. M. Knox, M.D., State Department of Health, Baltimore, Md.
George S. Luckett, M.D., Director of Public Health, Santa Fe, N. M.
Bleecker Marquette, Executive Secretary, Public Health Federation, Cincinnati, O.
E. V. McCollum, Ph.D., Johns Hopkins University, Baltimore, Md.
Milton J. Rosenau, M.D., Professor of Preventive Medicine, Harvard Medical School, Boston, Mass.
Grace Ross, R.N., Superintendent of Nursing, Department of Health, Detroit, Mich.
F. F. Russell, M.D., Director International Health Division, New York, N. Y.
W. L. Stevenson, Chief Engineer, State Department of Health, Harrisburg, Pa.
Professor John Sundwall, University of Michigan, Ann Arbor, Mich.
Edgar Sydenstricker, Milbank Memorial Fund, New York, N. Y.
Robert Spurr Weston, Boston, Mass.

JOHN A. FERRELL, M.D.,
Chairman

TENTATIVE PROGRAM—FIRST MEETING
WESTERN BRANCH
AMERICAN PUBLIC HEALTH ASSOCIATION
Hotel Utah, Salt Lake City, Utah
June 12, 13 and 14, 1930

Thursday, June 12

8:00 A.M.—Registration of delegates and visitors.

10:30 A.M.—Call to order by W. C. HASSLER, M.D., San Francisco, Calif., President Western Branch A. P. H. A.

1. Address of Welcome—HON. GEORGE H. DERN, Governor of Utah, Salt Lake City.
2. Response—W. C. HASSLER, M.D.
3. Report of Secretary—W. P. SHEPARD, M.D., San Francisco.
4. Announcements—T. B. BEATTY, M.D., State Health Officer of Utah, *Chairman*, Committee on Local Arrangements.

12:30 P.M.—General Luncheon—all members —Presiding: W. C. HASSLER, M.D.

Round Table Introductions.

Address—Relationships between A. P. H. A. and Western Branch, A. J. CHESLEY, M.D., Minnesota State Health Officer, President, A. P. H. A.

2:00 P.M.—Scientific Session—Presiding: W. F. COGSWELL, M.D., Helena, Mont.

1. New Aspects of Tuberculosis Prevention, J. A. MYERS, M.D., Minneapolis, Minn.
   Discussion opened by: J. J. WARING, M.D., Denver, Colo.
2. The Epidemiology of Tuberculosis, H. W. HILL, M.D., Vancouver, B. C.
   Discussion opened by: ALEXIUS M. FORSTER, M.D., Cragmor, Colo.
3. The Organization of Tropical Medicine in Western United States, A. C. REED, M.D., San Francisco, Calif.

4. Observations on the Epidemiology of Undulant Fever in Los Angeles County, Calif., GEORGE H. ROTH, M.D., and R. V. STONE, D.V.M., Los Angeles, Calif.

Discussion opened by: K. F. MEYER, M.D., San Francisco, Calif.

7:00 P.M.—Business Meeting—Presiding: W. C. HASSLER, M.D.

1. Report of Secretary—Minutes of Last Meeting.
2. Report of Committees:
   Committee on Constitution and By-Laws—GUY S. MILLBURY, D.D.S., *Chairman*.
3. Discussion, revision and adoption of Constitution and By-Laws.
4. Appointment of Committees *pro tem.*:
   Resolutions.
   Time and Place of Next Meeting.
   Nominating.
   Finance.

8:00 P.M.—Public Meeting—Presiding: H. P. KIRTLEY, M.D., Salt Lake City, Utah.

Address: (Subject to be Announced), LEE K. FRANKEL, PH.D., New York, N. Y.

Friday, June 13

9:00 A.M.—Symposium on Meningitis—Presiding: FREDERICK D. STRICKER, M.D., Portland, Ore.

1. Bacteriology and Serology of Meningococcus, E. C. DICKSON, M.D., San Francisco, Calif.
2. Epidemiology of Meningitis, KARL F. MEYER, M.D., San Francisco, Calif.
3. Source and Incidence of 1928 Western Outbreak, J. C. PERRY, M.D., San Francisco, Calif.
4. Oriental Importation, GEORGE PARRISH, M.D., Los Angeles, Calif. WILLIAM C. HASSLER, M.D., San Francisco, Calif. E. T. HANLEY, M.D., Seattle, Wash. C. P. BROWN, M.D., Victoria, B. C.
5. Intermountain Incidence, W. F. COGSWELL, M.D., Helena, Mont. B. B. JAFFA, M.D., Denver, Colo. WILLIAM CHRISTOPHERSON, M.D., Salt Lake City, Utah. T. B. BEATTY, M.D., Salt Lake City, Utah. F. W. ALMOND, M.D., Boise, Idaho.

Discussion opened by: A. J. CHESLEY, M.D., St. Paul, Minn.

2:00 P.M.—General Scientific Session—Presiding: WALTER M. DICKIE, M.D., Sacramento, Calif.

1. Rocky Mountain Spotted Fever, R. R. PARKER, M.D., Hamilton, Mont.

Discussion opened by: W. F. COGSWELL, M.D., Helena, Mont.

2. The Possibility of Controlling Ticks by Parasites, PROF. R. A. COOLEY, Bozeman, Mont.

Discussion opened by: W. J. BUTLER, M.D., Helena, Mont.

3. Public Health Training for Western Health Officers, J. C. GEIGER, M.D., San Francisco, Calif.

Discussion opened by: P. COVINGTON, M.D., Salt Lake City, Utah.

4. Results and Effectiveness of Recent A. P. H. A. Survey in Hawaii, F. E. TROTTER, M.D., Honolulu, Hawaii.
5. Relationship of Health Departments to Industrial Hygiene, C. O. SAPPINGTON, M.D., Chicago, Ill.

7:00 P.M.—Business Meeting—Presiding: W. C. HASSLER, M.D.

1. Report of Nominating Committee.
2. Election of Officers.
3. New Business.

8:00 P.M.—Public Meeting—Presiding: H. P. KIRTLEY, M.D., Salt Lake City, Utah.

Address—The White House Conference on Child Health and Protection, H. E. BARNARD, M.D., Washington, D. C.

Saturday, June 14

10:00 A.M.—Symposium on Sanitary Aspects of Proposed Boulder Dam—Presiding: R. J. STROUD, M.D., Phoenix, Ariz.

1. The Sanitary Engineering Aspect, PROF. LEON B. REYNOLDS, Stanford University, Calif.
2. The Immigration Aspect, FRED T. FOARD, M.D., Stockton, Calif.
3. Waste and Sewage Disposal Problem, HARRY HOMMON, San Francisco, Calif.

Discussion opened by: EDWARD E. HAMER, M.D., Carson City, Nev.

2:00 P.M.—School Health Program—Presiding: C. K. MACEY, Boise, Ida.

1. Western Health Education, SALLY LUCAS JEAN, Health Education Consultant, New York, N. Y.

Discussion opened by: AMY LYMAN, Women's Auxiliary, Church of Latter Day Saints, Salt Lake City, Utah.

2. Nutrition and Dental Caries—

Discussion opened by: HYRUM BERGSTROM, M.D., Salt Lake City, Utah.

3. Public Health Nursing in the West, ELIZABETH SOULE, Seattle, Wash.
4. How Shall We Attack the Problem of Preventive Dentistry? GUY S. MILLBURY, D.D.S., San Francisco, Calif.

Discussion opened by: HARRY B. TALHELM, M.D., Denver, Colo.

7:00 P.M.—Annual Dinner—Presiding: W. C. HASSLER, M.D.

1. Presidential Address—W. C. HASSLER, M.D.
2. Installation of New Officers.
3. Appointment Standing Committees.
4. Report of Resolutions Committee.
5. Address—A. J. CHESLEY, M.D.
6. Adjournment.

COMMITTEE ON ANNUAL MEETING PROGRAM

THE second meeting of the Committee on Annual Meeting Program was held on Friday, April 4, with 18 people present including Section Secretaries. Mr. Eggert reported on behalf of the Fort Worth Committee on Local Arrangements. He said that the committee has been successful in concentrating most of the meetings in the headquarters hotel. He stated that all of the commercial and educational exhibits would be held in the Hotel Texas also. A number of inspection trips of interest to the delegates have been planned. Some of these mentioned were: Swift and Armour Packing Plants, Sewage Disposal Plant, Water Purification Plants, Municipal Air Ports, Hospitals, Child Health Centers, Tour of North Side of Lake Worth, Tour of City, Trip to Local Health Department, Tea at Women's Club, Tea at Golf Course, Drive, and Theatre Party.

Mr. Eggert read a letter from Dr. Rafael Silva, Director General, Departamento Salubridad Publica, Mexico, D. F., appointing 5 official delegates from his department to the meeting, not including himself. These delegates will present papers (subjects to be announced later) in the following sections:

Dr. Salvador Bermudez: Health Officers and Epidemiology

Dr. Manuel Martinez Baez: Public Health Education and Vital Statistics

Dr. Pedro Perez Grovas: Laboratory and Food, Drugs and Nutrition

Dr. Mario Torroella: Child Hygiene and Public Health Nursing

Joaquin M. Segura: Public Health Engineering and Industrial Hygiene

Mr. Eggert reported further on the proposed post-convention tour to Mexico City. The tour was recommended to the Executive Board for approval, and further details concerning the trip will be found on page 530 of this JOURNAL.

Section representatives reported for their sections. The Vital Statistics and Industrial Hygiene Sections requested that they be allowed four and three individual sessions respectively, instead of the two which had previously been allotted them.

The complete preliminary program will be published in the September issue of the JOURNAL.

It was announced that the Texas Association of Sanitarians, the State Conference of Sanitary Engineers, and the American Association of School Physicians are planning programs at the same time as the meeting of the American Public Health Association.

The committee voted to endorse the plan for arranging special trains from St. Louis to Fort Worth for those A. P. H. A. delegates who wish to take advantage of this convenience. Delegates will be requested to make their own arrangements for travel to St. Louis.

The usual convention rates will apply from all sections of the country to Fort Worth. Railroad rates will be published in the June JOURNAL with other information.

Pyramid of the Sun, Teotihuacán, Mexico

ANNOUNCING UNUSUAL 10-DAY POST-CONVENTION TOUR TO MEXICO CITY FROM FORT WORTH!

PRELIMINARY plans have been approved by the Executive Board to extend the Fort Worth sessions to Mexico City with a joint program of scientific sessions, inspection, and entertainment, on the invitation of official Mexico.

A splendid 4-day program in Mexico City has been authorized by President Rubio and Dr. Silva and their respective staffs, which includes seeing the volcanic mountains, pyramids, and everything of interest in a city considered second most beautiful on this continent.

The trip to and from Mexico City will be made in a special train, visiting interesting and scenic points enroute such as San Antonio, Monterrey, the beautiful Mountains of Mexico and the Magic Valley of Texas, where citrus fruit grows the year around.

The train will consist of the very highest type of equipment, offering the luxuries of home, assuring those making the trip every minute of delight from the time they leave Fort Worth until their return to their homes.

While the class of train will be as high as any entering Mexico, the cost will be much lower than has been offered heretofore in comparable service.

The program in Mexico City, and maximum service at minimum cost in transportation, are being planned; also, arrangements will be made for members of the Association to receive specially advantageous rates from their point of departure including the Mexico City tour and return.

The tour will be limited to members of the Association, their families, and friends. A communication will be sent shortly to every member, submitting a detailed itinerary and further information about the trip.

Reservations are necessarily limited and therefore early reservation is greatly to be desired.

NEW MEMBERS

Health Officers Section

Charles W. Bartlett, M.D., Tampa, Fla., City Health Officer

Leo H. Flynn, M.D., Eau Claire, Wis., City Health Officer

Russell E. Hobbs, B.S., M.D., Wichita, Kans., Director of Public Welfare

Arthur McK. Shelamer, M.D., Union Springs, Ala., County Health Officer (Bullock)

Roy B. Jenkins, M.D., D.P.H., Edmonton, Alta., Canada, Medical Officer of Health

Joseph A. Preston, South Orange, N. J., Assistant Health Officer

Herman O. Hodson, Hillsboro, O., Health Commissioner, Highland County

D. R. Williams, M.D., Girard, O., Health Commissioner

Ferdinand M. Ferguson, B.S., M.D., Las Vegas, Nev., County Health Officer

Lester A. Round, Ph.D., Providence, R. I., Director of Public Health

Joseph F. Woodworth, Banff, Alta., Canada, Sanitary Inspector, Rocky Mountains Park

Loren Wallin, M.D., Natchez, Miss., Director, Adams County Health Department

John T. McGarry, Lyndhurst, N. J., Sanitary Inspector, Board of Health

Frederick T. Zieske, M.D., West Branch, Mich., Director, Consolidated Health Department, Dist. 2

Harry A. Reese, M.D., Yuma, Ariz., City and County Health Officer

Dr. Miguel E. Bustamente, Vera Cruz, Mex., Chief of Sanitary Unit

Nelson E. Newbury, M.D., Cambridge, Mass., Student in Harvard School of Public Health, formerly Director of Health of Scranton, Pa.

Laboratory Section

Charles E. Holzer, M.D., Gallipolis, O., Owner of Holzer Hospital for private and public use

Temp J. Worrell, D.V.M., Pampa, Tex., City Inspector

William M. Groesbeck, Hornell, N. Y., Bacteriologist, Hornell Branch, Steuben County Laboratories

Kenneth W. Riley, A.B., Grand Forks, N. D., Bacteriologist and Chemist, N. D. Public Health Laboratories

Rosina R. Coulson, Arlington, N. J., Bacteriologist, formerly with State Department of Health, Boston, Mass.

Lawrence J. Peterson, B.S., Boise, Ida., State Bacteriologist

Grace Eldering, B.A., Lansing, Mich., Bacteriologist, Michigan State Health Laboratory

Public Health Engineering Section

Marshall R. Diggs, A.B., Dallas, Tex., Vice-President and General Manager, Southwestern Sewer Company

Sidney P. Armsby, B.S., Houston, Tex. (Assoc.)

John A. Smith, Taylor, Tex. (Assoc.)

E. W. Kelly, C.E., Duluth, Minn., Manager, Water Works

L. Wesley Irwin, Los Angeles, Calif., Junior Civil Engineer, Department of Health

Andrew J. Fuller, C.E., Youngstown, O., Sanitary Engineer

Leonard M. Board, B.S., C.E., Morgantown, W. Va., Sanitary Engineer, Monongalia County Health Unit

Alfonso Ysunza, Vera Cruz, Mex., Sanitary Engineer, Department of Health

Eustace Keogh, C.E., Melbourne, C1 Aust. (Assoc.)

Industrial Hygiene Section

Stephen E. Whiting, B.S., Swampscott, Mass., Assistant Chief Engineer, Liberty Mutual Insurance Company

Food, Drugs and Nutrition Section

Paul E. Howe, Ph.D., Washington, D. C., Senior Biochemist charge of Nutrition Investigations, Animal Husbandry Div., U. S. Department of Agriculture

Ruth Walker, B.S., Seattle, Wash. (Assoc.)

John H. Bryant, H.D.A., Sydney, Aust. (Assoc.)

Lillian B. Storms, Ph.D., Washington, D. C., Director, Home Economics Education Work, American Bottlers of Carbonated Beverages

Herbert G. Bailey, Savannah, Ga., Chief Food and Veterinary Inspector, City Health Department

Child Hygiene Section

Allen M. Kerr, M.D., Pittsburgh, Pa., Medical Supervisor, Public Schools

Dr. Massillon Saboia, Rio de Janeiro, Brazil, Medical Inspector of Public Schools (Assoc.)

Ruth A. Bottomly, Philadelphia, Pa. (Assoc.)

James W. Bruce, M.D., Louisville, Ky., Medical Advisor, Public Health Nursing Association

Mary J. Baker, M.D., New Castle, Pa., Director of Health, Public Schools

Gladys O. Donaldson, R.N., Dixon, Calif., School Nurse, Dixon Union High School District

Edwin A. Layton, M.D., Tacoma, Wash., Director of Health, Public Schools

Public Health Education Section

Nina B. Lamkin, New York, N. Y., Consultant with Bellevue-Yorkville Health Demonstration

Adolph J. Roth, Ann Arbor, Mich., Student, formerly Director of Health and Physical Education, Three Rivers, Mich.

Sister M. Sylvia Morgan, D.Sc., Scranton, Pa. (Assoc.)

Francisco P. Miranda, Mexico City, Mex., Director of Hygiene Education, Department of Health

Gertrude E. Cromwell, B.S., Aurora, N. Y., Instructor, Health Education, Wells College

Anna J. Main, P.H.N., Eureka, Kans., Health Supervisor in Schools

Irving F. Barnes, M.D., Oyster Bay, N. Y., Public School Medical Supervisor

M. E. Burgess, M.D., Pine Ridge, S. D., U. S. Indian Service

Theron A. Tompkins, B.S., Mt. Clemens, Mich., Director, Health Education in Public Schools

Edith R. Sappington, M.D., Corvallis, Ore., Assistant Professor of Hygiene and Public Health, Oregon State College

David W. Pyle, Dallas, Tex. (Assoc.)

Public Health Nursing Section

Elizabeth Yerger, R.N., Elkton, Md., County Nurse

Lela Price, R.N., Dover, O., Public Health Nurse, Tuscarawas County

Virginia A. Jones, R.N., Richmond, Ind., Director of Public Health Nursing, Richmond and Wayne Counties

Margaret H. Hand, Binghamton, N. Y., Broome County Tuberculosis Nurse

Gertrude F. Hosmer, B.S., Honokaa, Hawaii, Public Health Nurse, Board of Health

Essie Bliss, R.N., New Lexington, O., County Public Health Nurse

Netta Ford, York, Pa., Director, Visiting Nurse Association

Elizabeth Burns, R.N., Wheaton, Minn., County Nurse (Traverse)

Edna L. Hamilton, R.N., Detroit, Mich., Director, Nursing Service, Children's Fund

Gertrude E. Brown, R.N., Pittsfield, Mass., Executive Secretary, Berkshire County Tuberculosis Association

Mary V. Anderson, R.N., Moorhead, Minn., School Nurse

Vivian C. Miller, Sacramento, Calif., School Nurse

Ruth M. Miller, Sacramento, Calif., School Nurse

Cecilia M. Giesing, R.N., Wausau, Wis., Marathon County Nurse

Mrs. Abbie L. Wamsley, Kingman, Kan., Red Cross Nurse

Epidemiology Section

J. Horace Gervais, M.D., D.P.H., Montreal, Canada, Supt. of Contagious Disease Division, Department of Health

Reginald P. Hardman, M.D., D.P.H., Toronto, Ont., Assistant Epidemiologist, Department of Health

Unaffiliated

Dr. Anna P. Boudin, New York, N. Y., Director, Dental Clinic, N. Y. Infirmary for Women and Children

Helen J. MacRae, R.N., Providence, R. I., Industrial Nurse, Builders Iron Foundry

Robert J. Bartley, C.E., Bay Shore, N. Y., Member, Suffolk County Board of Health

Otho F. Ball, M.D., Chicago, Ill., President, Modern Hospital Publishing Co. (Assoc.)

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Sustaining Members

Holland Institute of Thermology, Holland, Mich.

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Henry Albert, M.D., Des Moines, Ia., Elected Member 1907, Fellow 1922

Fletcher B. Dressler, Ph.D., Nashville, Tenn., Elected Member 1911

E. S. Fairchild, Bridgeport, Conn., Elected Member 1919

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UNAFFILIATED: Manton M. Carrick, M.D., Dallas, Tex.

INTERNATIONAL HYGIENE CONGRESSES IN DRESDEN

ABOUT 100 members of the Association have joined the delegation of the A. P. H. A. to the International Hygiene Congresses in Dresden this summer. They will sail June 14 on the S.S. Adriatic.

They will attend the Congress of the Royal Sanitary Institute in Margate, England, June 25 to 28, and visit London, Brussels, Cologne, Wiesbaden, Vienna, Munich, Geneva, Lausanne and Paris. The stay in Paris will be coincident with The First International Congress on Micro-biology.

In addition to the regular features of the trip, special trips of scientific interest are being arranged in the cities visited.

Detailed information may be secured from Homer N. Calver, Executive Secretary, American Public Health Association, 370 Seventh Avenue, New York, N. Y.

CORRECTION

WE are glad to correct a wrong impression given by the news item in the March issue concerning the Washington, D. C., survey. The study of hospital administration is being made by A. C. Bachmeyer, M.D., superintendent of the Cincinnati General Hospital, assisted by Mary L. Hicks, executive secretary of the Health Council of the Louisville Community Chest. Neither the American Hospital Association nor the American Public Health Association feels that such intimate studies can be successfully carried on as an activity of a professional society but that they are better handled by an individual, and the city of Washington is fortunate in having so outstanding a person in the field of hospital administration to advise its local agencies on this matter.

PUBLIC HEALTH ADMINISTRATION

HENRY F. VAUGHAN, D. P. H.

Health Inventory of New York City—The Research Bureau of the Welfare Council has limited the scope of its study to questions relating to the volume of health service in New York City afforded by voluntary agencies and the relationship of the service rendered to the needs of the city. It has carried on its study in such a way as to parallel the inquiry made of the Health Department in 1926 by the American Public Health Association.

There are 300 agencies furnishing organized health services which are rendered either through clinics, home visits by the public health nurses, by health education or through institutions. The bed care of patients is not completely considered but rather does the study embrace the volume of service rendered through clinics, home visits and health education.

In 1926 it was shown that the New York City Health Department scored 63 per cent on the *Appraisal Form*. At this time complete data on the volume of service by unofficial agencies were not available. This additional information has been sought and the score raised to 70.9 per cent.

The health department maintains the majority of the infant welfare clinics in the city, 68 compared with the total of 37 furnished by all other agencies. Eighty per cent of the clinic attendance is at health department stations. For preschool hygiene the health department has provided no service. In the field of maternal hygiene the health department maintains 14 of the 91 available clinics. It furnishes a still smaller proportion of clinic visits, but does provide 46 per cent of home visits in the field of maternal hygiene. Forty per cent of the tuberculosis clinics and about the same percentage of home visits are under the direction of the health department. Seven out of 141 clinics for venereal disease control are maintained by the department of health and receive 18 per cent of the total of 343,000 clinic visits.—*A Health Inventory of New York City*, Michael M. Davis and Mary C. Jarrett, Welfare Council of New York City.

School Health Service in New York City—Recommendations for the reorganization of the medical examination and health supervision of school children in New York City have been accepted by a committee consisting of representatives of the Department of Health, Department of Education and other health organizations.

Parents should appreciate that the prime responsibility for the health of their children rests in their hands. The plan of examination to be inaugurated in the schools is for those children who have not received the required examination from their own physicians. Those recommended for examination are: (a) all school applicants, before entering school; (b) all new children in kindergarten and first grades; (c) all in other elementary grades entering New York City schools for the first time; (d) all other children in elementary and junior high school grades found by teacher or nurse to have gross defects and those absent frequently on account of illness,

(e) all children in the 7th grade and those 13 years of age and above this age, who may be leaving school to enter industry; (f) all handicapped children to receive specialized examinations; (g) provision for reëxamination and follow-up; (h) special examination for children entering competitive athletic sports.

The physical examinations are to be made by teams or groups consisting of 3 physicians, school nurses and clerks. Parents are to be invited to attend such examinations. Histories, testing of vision and hearing (except the entering grade), weights and measurements, are to be done in school prior to the medical examination. From the medical team one physician will be chosen to examine eyes, ears, vision and hearing; another heart, lungs and orthopedic condition; the third nose, throat, teeth, glands and skin. The record card is to be a combination of the scholastic and medical rating of the child.

The home follow-up for the correction of defects will be the responsibility of the school nurse. Children suspected of suffering from communicable disease will be visited by diagnosticians of the department. [This plan of the newly organized health service for school children in New York City is substantially identical with the plan which was developed and has been used so effectively in Detroit during the past 9 years.—Editor.] A Plan for the Medical Examination and Health Service of School Children of New York City, 1929—The Children's Welfare Federation, New York, N. Y.

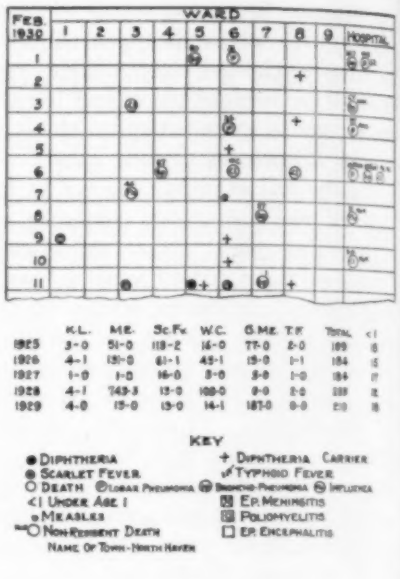
Health Administration in Racine, Wis.—W. W. Bauer, M.D., Health Officer of Racine, has for the fifth consecutive year moulded his annual report around the *Appraisal Form for City Health Work* of the American Public Health Association. The department in 1929 rated 78.2 per cent, with a perfect score in vital statistics; 85 per cent in communicable disease control due to the failure of parents to avail themselves more extensively of diphtheria prevention and smallpox vaccination; 72 per cent for venereal disease control due largely to incomplete reporting; 96 per cent for tuberculosis control; 29 per cent for maternal hygiene due to the lack of prenatal clinic and field nursing service; 88 per cent for infant hygiene; 58 per cent for preschool hygiene (increased from 34 in 1928 due to special campaign); 87 per cent for school hygiene; 99 per cent for food and milk control; 89 per cent for sanitation; 96 per cent for public health instruction. Cancer control has also been included in the rating during the past 2 years and receives a credit of 43 for 1929. Heart disease control has increased to 74 per cent for 1929 as compared with 47 in 1927.

Racine has completed its fourth annual campaign for diphtheria irradication. In 1924 there were 121 cases of diphtheria reported and 5 deaths while in 1929 there were but 18 cases of which only 4 occurred in the last 8 months, and there were no deaths. The Health Officer states that his credit in the *Appraisal* for this work is low because the *Appraisal* does not consider the number of children to whom toxin-antitoxin has been given but only those shown to be immune by the Schick test This annual report also announces the construction of a new City Hall in Racine, with appropriate quarters for the Health Department which have been designed by the Health Officer himself. —*Annual Report of Racine Health Department*, W. W. Bauer, M.D.

Epidemiological Studies in New Haven, Conn.—Dr. Dwight M. Lewis, Director, Bureau of Communicable Diseases, Department of Health, New Haven, has very kindly submitted a

sample of the epidemiological sheet which he uses to keep daily account of the incidence of certain communicable diseases in his city. The accompanying chart and key furnishes an idea of the sheet kept by the epidemiologist. New Haven has 33 wards but in order to save space the chart has been cut so as to show but 9 wards and 11 days of the month. A table at the bottom of the sheet carries a summary for the corresponding month for a series of years giving, as indicated by the key, cases of communicable disease and deaths from certain causes as well as total deaths. There also appears the number of deaths under 1 year of age and the deaths from pneumonia (lobar- or broncho-) together with age of the deceased. This work-sheet gives a very comprehensive picture of the current condition of the city's health.

EPIDEMIOLOGICAL SHEET


FEB. 1930
WARD
1 2 3 4 5 6 7 8 9
HOSPITAL
K.L. M.E. Sc.Fv. W.C. G.Me. T.F. TOTAL <1
1925 3-0 51-0 119-2 16-0 77-0 8-0 199 6
1926 4-1 131-0 61-1 45-1 15-0 1-1 184 5
1927 1-0 1-0 16-0 3-0 8-0 1-0 184 17
1928 4-1 743-3 13-0 108-0 9-0 3-0 239 12
1929 4-0 15-0 13-0 14-1 187-0 0-0 210 18
KEY
DIPHTHERIA
SCARLET FEVER
DEATH
UNDER AGE 1
MEASLES
NON-RESIDENT DEATH
NAME OF TOWN - NORTH HAVEN
DIPHTHERIA CARRIER
TYPHOID FEVER
EP. MENINGITIS
POLIOMYELITIS
EP. ENCEPHALITIS

LABORATORY

C. C. YOUNG

AN IMPROVED TECHNIC IN BURRI'S METHOD OF ISOLATING OBLIGATELY ANAEROBIC BACTERIA

IVAN C. HALL, PH. D.

Department of Bacteriology and Public Health, University of Colorado School of Medicine and Hospitals, Denver, Colo.

IN 1902, Burri[1] devised the simple technic of a deep tube plugged at the lower end with a rubber stopper to facilitate the removal of a cylinder of agar containing colonies of anaerobic bacteria which he wished to isolate in pure cultures. These tubes, stated by him to be of the same dimensions usually used for bacterial cultures, were plugged with cotton at both ends for hot air sterilization; the rubber stoppers were sterilized separately under water in a flask in the autoclave.

In making a culture, one of the cotton stoppers was removed and replaced with a rubber stopper. Three dilutions of the mixed culture in 2 per cent nutrient agar melted and cooled to 42° C. were then layered into the tube and covered with a further layer of sterile agar. After incubation the rubber stopper was removed and the agar cylinder pushed

out upon a piece of sterile filter paper, cut into thin sections 1–2 mm. thick with a flamed knife, and well separated colonies transferred as pure cultures to suitable mediums.

Burri pointed out the superiority of deep culture methods over surface methods of isolation, and more than ten years ago, after a fairly complete study of numerous devices for anaerobic culture,[2] I concluded that there were serious theoretical as well as practical objections to all surface methods of isolating obligate anaerobes,[3] which caused me to adopt the Burri technic in a slightly modified form as the method of choice for isolating anaerobic bacteria. This has recently been described in detail.[4]

The most suitable size of tube is about 9 mm. x 180 mm. and instead of sterilizing the rubber (or cork) stoppers separately, they have been placed in position before sterilization. This required autoclave sterilization in the case of rubber stoppers, but there has always been considerable trouble both with rubber and cork stoppers becoming loose, even after they were reset when the culture was poured, permitting the melted agar to leak out before it congealed. This not only necessitated repetition of the work but was highly objectionable in the consequent contamination of the containers for the tubes and the work table, often with virulent and resistant spores.

Experiments were therefore begun several months ago to find a substitute for the stoppers, using first gelatin films hardened in formaldehyde, and later collodion films which it was thought might be stripped off when the cylinders were ready to be pushed out; but the gelatin films were an utter failure and the collodion films were clearly inferior to the stoppers.

Later, Capes-Viscose caps, now manufactured by the Dupont Cellophane Company, were tried. These caps are sold in cans containing a weak solution of formaldehyde; they are therefore sterile. When placed over the end of a tube they contract on drying to form a tight fit. Unless they are soaked for a while in a glycerine solution, they become too dry in the arid climate of Denver and often crack. We experimented with various concentrations of glycerine and found that 5 per cent glycerine solution, sterilized in the autoclave, gave the best results; higher concentrations caused the caps to wrinkle. Burri tubes capped in this manner could be sterilized either in the hot air sterilizer (70° C. for one hour) or the autoclave (20 lbs. for 30 min.) but there was considerable cracking of the caps afterward, especially when they were sterilized in the hot air. They were scarcely satisfactory as a substitute for the stoppers; if a slight wrinkle was present the liquefied agar would run out, and the contact of the agar gel with the caps softened them and favored the growth of molds. We used them for a few weeks but only with indifferent success.

The idea then occurred to utilize the caps to hold the stoppers in and this gives us well nigh perfect performance either with rubber or cork stoppers. We prefer the latter as they are cheaper and permit dry air sterilization. The tubes are prepared by the technicians, cotton stoppered at one end, cork stoppered at the other, and sterilized. The cork stoppers are then reset, capped with moist cellophane caps that have been soaked overnight in sterile 5 per cent glycerine, and dried. Our technic differs again from that of Burri in that we do not layer different dilutions in the same tube; we prefer to tube the different dilutions separately and the sterile agar top layer seems entirely unnecessary. We also use 1 per cent agar instead of 2 per cent.

We practically never have leaks any more. No molds grow on the dry caps

and the stoppers and ends of the tubes are well protected against contaminations.

The cultures are opened by stripping the caps diagonally with a penknife and removing the stoppers by means of flamed forceps. If necessary, a little flaming of the tubes will cause the meat infusion 1 per cent agar cylinders to slide out into sterile Petri dishes and they may then be sliced or broken up and seared with a hot spatula for the picking of selected colonies.

REFERENCES

1. Burri, R. Zur Isolierung von Anaëroben, *Centralbl. f. Bakteriol.*, Abt. 1 Orig., 8: 533, 1902.
2. Hall, I. C. A Review of the Development and Application of Physical and Chemical Principles in the Cultivation of Obligately Anaerobic Bacteria, *J. Bact.*, 17: 255, 1929.
3. Hall, I. C. Practical Methods in the Purification of Obligate Anaerobes, *J. Infect. Dis.*, 27: 576, 1920.
4. Hall, I. C. The Study of Anaerobic Bacteria, Supplement D in *Manual of Methods for Pure Culture Study of Bacteria*, Soc. Am. Bacteriol. Dec., 1929.

INOCULATING NEEDLES

E. G. HASTINGS

Professor of Agricultural Bacteriology, University of Wisconsin, Madison, Wis.

IN the February number of the JOURNAL, Dr. Mudge has described an inoculating needle which he has found to be advantageous over the glass handled needle or the devices to be obtained from various supply houses.

The needle handle used in our laboratories is made from No. 6 B. & S. gauge aluminum alloy rod, which can be purchased from the Aluminum Company of America. The rod is tempered so that it is sufficiently stiff for all bacteriological work. It can be obtained in pieces from 6′ to 8′ long, which can be sawed into pieces of convenient length with a hack saw. The rod supplies a perfectly straight handle.

The pieces of the rod are clamped in a vise and a groove sawed at a sharp angle to the axis of the rod. The depth of the groove at the end of the rod would be approximately one-half its diameter and would extend back on the shaft of the rod approximately 1″.

Platinum iridium wire can then be placed in the groove, which is closed by gently tapping with a hammer. For student work, nichrome wire of No. 24 gauge is used in place of platinum iridium. The stiffness of nichrome wire is sufficient that a much smaller gauge can be used than is possible with the platinum iridium wire, the only disadvantage being that it heats and cools somewhat more slowly than the platinum wire. For continuous work the metal handle becomes uncomfortably hot.

A glass mantle for the lower handle can be made from ordinary glass tubing of approximately the same internal diameter as the diameter of the rod. The glass is closed at one end by fusing. A little sealing wax is placed in the tube, melted, and the aluminum rod inserted into the melted sealing wax, thus preventing the rod from dropping out of the glass.

VITAL STATISTICS

LOUIS I. DUBLIN, PH. D.

Influence of Nonresident Deaths on Boston's Death Rate—The large number of nonresident deaths in Boston, 2,187, a total greater than that of any other American city having a population of more than 300,000, causes Boston's statistics to suffer by comparison with those of other cities. When it is considered that practically 19 per cent of the total deaths in Boston for the year 1928 were those of nonresidents, and that of these 91.5 per cent were deaths in hospitals, the importance of these deaths becomes apparent in the rate. The outstanding reductions are found in anterior poliomyelitis, which showed a rate of 1.75 per 100,000 against 0.50 when nonresidents were deducted; scarlet fever 3.88 against 1.88; diphtheria 7.88 against 4.13; cancer 153.52 against 115.74; and heart disease 306.43 against 277.15. Other diseases showing reductions in rate when our nonresident deaths were deducted are broncho-pneumonia, diarrhea and enteritis under 2 years, congenital malformations and accidents.

A striking feature is exhibited in a comparison of Boston's nonresident deaths with those of New York City. With a population more than seven and one-half times as great as Boston, New York City had only 2,050 nonresident deaths during 1928, or 2.6 per cent of the total deaths for the year. Boston had 2,187 nonresident deaths, or 18.9 per cent of the total deaths for the year. Comparing nonresident infant deaths, New York City had 144, or 0.18 per cent, while Boston had 362, or 3.1 per cent of the total from all causes. In cities with a population of less than 300,000 where information is available, Hartford, Conn., Salt Lake City, Utah, and Albany, N. Y., had higher percentages of nonresident deaths than Boston, the figures for the year 1928 being 28.3 per cent of the total deaths for Hartford; 23.3 per cent for Salt Lake City; and 21.2 per cent for Albany.—*Boston Month. Health Bull.*, 19: 9–11 (Jan.), 1930.

Maternal Mortality—The Royal Free Hospital has published a report on maternal mortality and an analysis of causes of death. About 90 per cent of patients were booked for admission from antenatal clinics, and at the most about 10 per cent were sent in as emergency cases. All cases of puerperal sepsis were completely isolated from the main block of wards. The report was based on maternal deaths which occurred during the 8-year period 1921 to 1929, and included both in-patients and district patients. The total number of antenatal attendances during this period was 49,047. Among cases in the hospital, there were 77 cases of placenta praevia, 21 cases of eclampsia, 10 cases of craniotomy, 476 cases of forceps, giving 5 per cent of all deliveries, and 152 cases of cesarean section, or 1.6 per cent of all deliveries.

There were 26 maternal deaths, corresponding to a mortality rate of 2.8 per 1,000 live births. The number of infants born alive was 9,152; neonatal deaths, 145; total number of stillbirths, 366, of which 199 were at term and 167 premature. Six deaths were attributed to obstetrical shock, 4 to shock from hemorrhage, 6 to sepsis, 2 to embolus, 4 to toxemia and eclampsia, 1 each to broncho-pneumonia and acute appendi-

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citis. An equal number of deaths occurred among primiparae and multiparae. The primiparae preponderated only in the toxemia group. The cases of puerperal sepsis showed that operative interference and complications at labor increased the risk of sepsis to a great extent. Most cases of toxemia had some dental sepsis. Extraction and dental treatment were carried out in over 70 per cent of the patients treated in the antenatal clinics.—L. McIlroy and B. Turner, *Lancet*, 1: 97–99 (Jan. 11), 1930.

Age Distribution of Influenza Deaths in Cleveland, O., 1918–1929—The marked differences which exist in the distribution of deaths registered as "influenza" by age, sex and color in pandemic and interepidemic years warranted the belief that there were fundamental differences in the etiology of the respiratory infections listed under that title. During the influenza epidemic of 1918, it was generally believed in Cleveland and elsewhere that the population groups hardest hit were those of middle life.

A study of mortality rates of influenza and pneumonia for the months of increased incidence from the pandemic in 1918 to the subsidence in 1928 was undertaken. The data were compiled from the records of the Division of Health of Cleveland. The curve for 1918 showed high mortality rates in middle life, which is characteristic of pandemic influenza. The striking difference between this and the curve for influenza of the years since 1918 was an almost certain indication that there was a difference in etiology. The pneumonia curve of 1918 with respect to the rates in advanced life corresponded to the normal pneumonia curve and to that of influenza in non-pandemic years but differed from these by a rise in the rates for the middle decades of life. The influenza curve of 1920 was very similar to the pneumonia curve of 1918; however, this probably included both the influenza of non-pandemic years and true pandemic influenza. The distribution of deaths by age in the normal pneumonia year and in the influenza epidemic not of pandemic type was practically identical.

Comparing the Cleveland data for 1918 and subsequent years with those of the registration area from 1890 to 1918, there was complete agreement in age distribution and sex. As to the latter, 54 per cent of the total deaths during the 1918 epidemic were male deaths while in the so-called influenza of succeeding years 48 per cent were male deaths.

The estimate of Cleveland's colored population was too uncertain to warrant any comparison of white and colored deaths.—G. W. Moorehouse, *Am. J. Hyg.*, 1: 196–201 (Jan.), 1930.

The Problem of Diabetic Mortality—Within the past 15 years, the position of the diabetic patient has undergone a remarkable change. The dietetic treatment of the disease has been completely altered. Since 1922, insulin has been recognized as an essential method of treatment. With the use of this valuable therapeutic measure, a decrease in diabetic mortality was expected. But there has been slight alteration in the diabetes death rate within the past 6 years. Elliot Joslin was one of the first to recognize this as early as 1925.

An analysis was made of the diabetes mortality in the State of Victoria before the introduction of insulin and for subsequent years. Since the introduction of insulin therapy there has been a definite decrease in deaths in younger people up to age 45. This is not surprising because complications which play an important part in older patients are rare before the age of 40 and by control of the diabetic condition these younger people are allowed to live for many

years in comparative safety. There has been a distinct increase in diabetic mortality in the higher age groups. The increased mortality over age 50 has occurred largely among females. This has been noticed also in the United States and England but may be due to the disproportion in sex distribution accentuated as a result of the late war. The peak of the mortality curve has shifted from age 65 to 70. The average expectation of life has been increasing but not to an extent sufficient to explain such a marked shift.

There is definite evidence particularly in the statistics of other countries that diabetes waxes and wanes with the circumstances of the people. It is therefore conceivable that alterations in the habits of life of the people and the overtaxing of the parts of the body engaged in carbohydrate metabolism may be responsible in part for the increase in deaths which are classed as diabetic.

Another analysis was made of the diabetic mortality statistics in Alfred Hospital for the 4 years immediately prior to the use of insulin and for the 6 subsequent years. There has been a marked decrease in the deaths from uncomplicated diabetes but no change in complicated cases. The average age at death of the uncomplicated cases is 37 years while that for the complicated cases is 57 years.—Ewen Downie, *Victoria, Australia Quarterly Health Bull.*, 623: 629 (July–Sept.), 1929.

Prevention and Treatment of Pneumonia—The effect of concentrated serum on the death rate from pneumococcus pneumonia was shown in a summary of 885 cases observed in Bellevue Hospital. Altogether, 441 patients with pneumococcus pneumonia were included in the serum treated group. The most striking results were obtained in the pneumococcus Type I series. In 153 treated cases, the death rate was 20.6 per cent while the control series of 147 cases showed a mortality of 32.6 per cent. For Type II, the mortality was 41.5 per cent for treated and 54.5 per cent for untreated. Serum did not have any effect in pneumococcus Type III cases, the death rate being actually higher for treated cases, 40.0 per cent as against 28.6 per cent for untreated. In the miscellaneous group IV cases, serum seemed to have a beneficial effect; however, factors other than serum may have modified the death rate from lobar pneumonia.

The death rate for the entire group of 441 treated cases was 30 per cent against 39.2 per cent in 444 untreated cases. Mortality for both series, treated and untreated, was lower in patients under 40 years of age than for patients over that age. Relatively speaking, serum appeared to be just as effective in middle-aged and elderly patients as it was in younger patients.

Treated patients admitted during the first 3 days of the disease had a considerably lower death rate than untreated patients admitted during the same period, in fact, distinctly lower than for the entire untreated series. This was most marked in the Type I group, in which the death rate for treated patients admitted early was approximately one-third of that for the entire group of untreated Type I cases. The death rate for Type II cases admitted early was 34.6 per cent against 54.6 per cent for the entire group of untreated Type II cases. Thus, if patients with Types I and II pneumonia were admitted early and treated with serum, the death rate for pneumonia, Types I and II, could be cut respectively to one-third and one-half the present figures.—R. L. Cecil, *New York State J. Med.*, 30: 210–214 (Feb. 15), 1930.

Health of Palestine—The Department of Health of Palestine reports a small decline in the infant mortality rate for 1928. The rate for the coun-

try as a whole is 186.34 per 1,000 and 203 per 1,000 among the Moslem population. The relatively low figure of 95.89 for the Jewish population is attributed partly to the interest in maternal and infant welfare and partly to the fact that Jewish mothers are comparatively young and healthy. The total birth rate of 53.98 compares with 50.35 in 1927, and the Moslem birth rate has risen to 60.99. The number of admissions to hospitals and attendance at dispensaries continues to be high. In general, services to pregnant women, infants and children among the Arab population are inadequate.

The department records with satisfaction that the standard of school medical service throughout the country has been well maintained. The health of the children both in Arab and Jewish schools is remarkably good, while the training in hygiene and the elements of mental science is having a beneficial influence on the pupils.—*Brit. M. J.*, 1: 81 (Jan.), 1930.

Public Health in Kenya—A 1928 health report for the Colony and Protectorate of Kenya stated that the most outstanding feature of the year in regard to incidence of communicable diseases was a number of severe outbreaks of malaria in the highlands. For a time, the situation was undoubtedly serious. No other unusual incidence of communicable disease occurred during 1928 and it cannot be said that the general health of the Colony as a whole was less satisfactory than in previous years. Because of inaccurate vital statistics, any variations in health standards cannot be measured. However, work was begun in 1928 which will show its results later. This work was undertaken chiefly in connection with ankylostomiasis control in the Diga Reserve on the coast.

Findings to date showed the standard of health of Africans to be generally at a low level and the physique and capacity of the population to be affected as a result of infection with endemic preventable diseases. The incidence of plague was not notable. Five cases of smallpox were reported but the source of infection was not traced. Of acute fevers, pneumonia caused much sickness and was responsible for a high mortality. In native reserves, yaws caused much disability, 85,617 cases being treated during 1928. Syphilis presented a problem of some magnitude in certain areas. Increased efforts were made to induce patients to attend regularly for treatment.

Medical work in the Colony was carried out on normal lines. Particular attention was devoted to helminthic diseases and treatment of syphilis in native reserves and to malaria control in towns.—*Lancet*, 1: 113 (Jan. 11), 1930.

PUBLIC HEALTH ENGINEERING

ARTHUR P. MILLER, C. E.

A TYPHOID FEVER EPIDEMIC IN THE FAR NORTH

F. M. BRICKENDEN

District Engineer, Canadian Department of Pensions and National Health, Winnipeg, Man.

AN epidemic of typhoid fever broke out at Mile 327 on the Hudson Bay Railway in Northern Manitoba, Canada, during the late winter and early spring of 1929. This epidemic included some 57 cases and about 8 deaths. A strict system of inoculation of all persons living in the area was enforced by the medical officers so that the epidemic was held in check and finally came under complete control by June, at which time the ice finally moved out of the lakes and rivers and summer conditions prevailed.

Mile 327 or Gillam is a diversion point on this railway, the water supply for which comes from a river not a mile away from the railway tracks through a system originally intended to supply the railway with water for its locomotives and general use.

A description of the location may assist this explanation. The railway, known as the Hudson Bay Railroad, has been under construction for some time. It runs from the Pas on the Saskatchewan River in Northern Manitoba, Canada, to Churchill, a port at tidewater on Hudson Bay, also in the province of Manitoba, about 59° north latitude. The distance between these two places is 511 miles. The country through which the road passes varies. The first few hundred miles is park country but the last section nearer the salt water goes through a muskeg, with only small timber growth parallel to the bay itself.

During construction many temporary arrangements were made to use the existing water supplies all along the line. In the case of Gillam, 327 miles away from the Pas, the water service originally installed to care for the locomotives and divisional shops only had as a source the little Nelson River.

This system consists of a pumping plant housed near the water's edge and equipped with a 30 H.P. Ruston-Hornsby fuel oil engine and a triplex pump, which takes water from a cylindrical deep well placed between the pump house and the river. There is but one pipe line from the pump to the standpipe and general outlet at the railway tracks. At this point, there is an elbow in the river which makes a sweep of about half a mile around to a point lower down where the outfall from the septic tank is located.

This outbreak appears to have been due to the fact that during the very cold winter weather the river was frozen solid below the outfall of the sewer, thus forming an ice dam in the river bed and gradually forcing pollution back up the stream and past the waterworks intake. The Resident Engineer had levels run following the freeze-up and found that there was no fall in the river, but that the water surface was level.

The original plan for this pumping plant was to supply engine water at the roundhouse only. Hence, when its use, unchlorinated, for drinking and culinary purposes became common, the

contamination immediately became apparent. There is a pedestal type of chlorinator in the pump house now which is in constant use.

The Department of National Health was called upon to check up on this outbreak and its representative arrived early in June. Several drastic improvements were recommended; as, for instance, the discontinuance of the practice in vogue at many of the pump houses on this line of returning waste water to the deep well.

The Munich Sewage Treatment Plant—The author describes some novelties in design and operation of the Munich sewage treatment plant, which is planned for a flow of 3.6 cu. m. per sec. The special features of the plant are:

1. Its use of large single units, which have proved to be more economical than a multiplication of small plants. Three years' experience has shown no ground water difficulties to be caused by the exceptional depth of the combined settling and septic tank.

2. The use of the rock of the district for most of the building, with reinforced concrete only for supporting parts, thin walls, and service bridges.

3. The special sloping angle of the tank walls, which has proved advantageous for sludge digestion as the sludge is deposited in the septic chamber in thin, even layers.

4. Underground drainage supplied with pump shafts so that tanks can be emptied without danger of floating.

5. The sewage is distributed by divided channels and unequal division of the sludge is remedied by screens in the main channel which break up accumulations.

6. The sludge is deposited on fields in summer as dry, and in winter as wet sludge. One-third of the available ground is covered yearly, and it is found that the process can be repeated after 3 years without harm as the sludge is practically consumed in that time. In discussing the utilization of the sludge as fertilizer, the author gives comparative analyses of Munich sludge, stable manure, and the dry Baltimore fertilizer, and an account of the most suitable crops and the methods and times of applying the sludge for different crops.

7. The plant is planned for simple and hygienic service. The amount of attention required by the different parts is described. No trouble is experienced with gas or sludge rising into the settling tank. The dredger which removes the dried sludge from the drying bed leaves a very thin layer of sludge on the sand. This prevents sand being deposited on the fields and also does away with the necessity for frequent renewal of the sand surface. The yearly service cost of the whole plant is about 0.13 RM. per head of the population.

8. Increase of income. This can only be done by the gas production. Experiments showed that gas production varied with temperature, that a completely de-gasified sludge dried badly, and that digestion was better in tanks covered for gas production than in uncovered tanks. The amount of organic matter per head of the population and the amount of gas per liter of organic matter were calculated and the results tested by laboratory experiment, which showed that 20.6 liters of gas per head per day could be obtained by complete digestion at a temperature of 26° C.

The part played by the floating layer of scum in the septic chamber is then discussed. At Munich this had to be removed after 21 years' working. The tank had to be put out of action for the purpose and gas production was low for some time after it was in action again. This was the result of the removal of an easily putrefiable layer just below the top layer of scum. A large septic chamber from which the scum

need seldom be removed is therefore an advantage. Another favorable influence on digestion is the direct current through the septic chamber. The method of calculating the amount of this current is described.

The harmlessness of the effluent is shown by the fact that even rainbow trout can live in ponds fed with it. The possibility of increasing the gas output by lengthening the period of digestion or by stirring or artificial heating is discussed.—H. Keppner, *Gesund. Ing.*, 52: 678–679, 1929. (From Papers of Water Pollution Research Board, England.)

Innovations in the Chemical Purification of Drinking Water and Information on the Present Application of Activated Carbon and Earth—A paper read at a meeting of the German Union of Gas and Water Experts, describing physical-chemical processes of purification, especially in connection with the supply to Magdeburg of Elbe water of very variable condition and composition. A list is given of over 50 methods of treatment on which a very large number of experiments on small and large scales were made. The Magdeburg plant for dealing with the river water is described and illustrated. The pumped river water flows through four filters at gradually decreasing speed. These are arranged in steps so that between filters the water is aerated by falling over a waterfall. Then follows sand filtration in covered primary filters, at four or five times the normal speed, and slow secondary filtration for bacterial purification. The different methods of cleaning these filters are described. Chlorine gas is added by Ornstein's process in the first pure water reservoir.

The author then deals with the experiments made to find the best means of using this plant. Chlorination of the raw water before the first filters was tried with liquid chlorine, and with chlorine preparations such as Mianin and Duamin. This chlorination showed advantages in algae destruction, decrease of bacterial growth, and a longer filter period, but smell and taste were not removed.

Coagulants were then tested, using pulverized activated carbon as the adsorption medium. The history of the activation of carbon is given, and an account of experiments. Activated carbon, alum, and marble calcium hydroxide were added in this order before the primary filters. The adsorptive effect of the carbon was, however, impaired by the formation of a coating of aluminium hydroxide, though coagulation and physical improvement were good. The addition of activated carbon, lime and aluminium sulphate did not give good results. Alum, alone or with sulphuric acid, added either to the untreated water or before the primary filters, gave good results in iron and manganese removal, but smell and taste were not improved. Chlorination of the raw water with a subsequent addition of aluminium sulphate and lime showed that the chlorine brought into solution matter which should have been precipitated and that there was no saving of alum. It was found that there were two favorable pH points for precipitation, one from 5.2 to 5.5 and the other from 6.7 to 6.9.

More satisfactory results were obtained by treating the water before the primary filtration with filter-alum and fuller's earth, with subsequent activated carbon filtration. The final filtrate was satisfactory in freedom from color, taste, and smell; iron and manganese were absent and organic matter reduced to one-half. The application of this process to practice and the construction of an activated carbon filter plant are described. The results of the different experiments are given in tables.

In discussion, Link dealt with the present condition of the methods of

purifying surface water. Fuller's earth had not been found so satisfactory in Stuttgart. Activated carbon could be applied for the removal of excess chlorine. The process and construction of the filter required further investigation.

Adler mentioned previously used processes which corresponded to those examined by the author. The use of activated carbon was limited by its rapid saturation, and the lack of simple methods of regeneration. Its real application was as a dechlorinating medium.

Haupt confirmed that good results had been achieved at Magdeburg with fuller's earth. Settling time of sufficient length must be allowed. The purification of the water must be as complete as possible before the activated carbon filter is used to remove smell and taste.

Gruschka recommended the Adler process of superchlorination and dechlorination with activated carbon. This was satisfactory with phenol-containing waters.

Bamberg dealt with the problem of acidity in a piped supply and the difficulty of purifying Magdeburg water sufficiently for a satisfactory use of activated carbon.

The author in reply agreed that water should be well purified before the use of activated carbon, but pointed out that activated carbon was used with good effect on beet sugar factories' effluents. With the specially unfavorable and changeable Elbe water, fuller's earth, by its adsorptive capacity and specific gravity, shortened the settling time and lessened the cost of aluminium sulphate and of the carbon.

Bach emphasized the necessity of limiting the pollution in a river, so that a water suitable for drinking could be procured by treatment.—O. Koenig, *Gas- u. Wasserfach*, 72: 1065 and 1091, 1929. (From Papers of Water Pollution Research Board, England.)

The Anthrax Danger in Lahr and Its Removal—The problem of anthrax danger from hides and tanneries has not been satisfactorily solved. The author has investigated conditions at Lahr. The danger concerns men as well as animals and arises from the hides, not from the tanning waste water, though the latter encourages and increases it. To treat the matter at the source, infected skins should be separated. Disinfection of skins is opposed by the leather industry. The writer recommends further investigations by the State of the pickle-and-lye process and the Ascoli process. The use of solid wastes and residues as fertilizers should be forbidden, and the treatment plants kept under inspection to prevent solid matter being run off with the effluent. Inoculation of cattle, drainage of fields and improvement of cattlesheds should be attended to.—F. Uhlenhuth, *Reichsgesundsbl.*, 4: 288, 1929; *Wass. u. Abwass.*, 26: 156, 1929. (From Papers of Water Pollution Research Board, England.)

Methyl Chloride Poisoning from Domestic Refrigerators—Toxic action of methyl chloride was first reported by Eulenberg in 1876. Pigeons were used in his experiments. Exposure to gas produced difficulty in breathing, dilation of pupils, and caused birds to stagger and fall. Removal from exposure was followed by prompt recovery.

Grabis was the first to report accidental poisoning from the gas in 1914. Roth, in 1923, reported 10 cases. Schwartz, in 1926, reported 10 cases and 1 death. In all the above cases, the gas came from ice machines. Baker, in 1927, reported 21 cases among employees in a factory manufacturing refrigerators. Since August, 1928, 29 cases in Chicago with 10 deaths have been reported.

The onset is generally marked by

progressive drowsiness, mental confusion, stupor, weakness, nausea, pain in the abdomen, and vomiting. The article gives an outline of the methods of diagnosis and treatment and also histories on 6 cases.—A. H. Kegel, W. D. McNally and A. S. Pope, *J. A. M. A.*, 93, 5: 353–358 (Aug. 3), 1929. Abstr. Paul S. Fox.

Some Examples of Pollution of Streams by Industrial Wastes—Some of the forms of pollution are mentioned. Literature on the subject is listed and the question of legislation discussed. The Sudbury River in Massachusetts is taken as an example of a slightly polluted stream and the Pocasset River in Rhode Island as a grossly polluted stream due to wastes from textile establishments. The seasonal changes which the waters of these streams undergo are diagrammed and discussed. Remedies are suggested.

The author's conclusion states: The subject of industrial pollution is extremely important, not only for plants but for communities using the same streams. So far the data pertaining to the problem of purification of textile wastes are extremely limited, and it is hoped that increased appropriations may be placed in the hands of state authorities. Problems involving industrial sewage should be considered from the standpoint of the stream, and not from the standpoint of the individual plant. Group treatment is extremely desirable, and the formation of conservancy districts or river boards is to be recommended. Standards are difficult to establish, but it seems that an attempt should be made to maintain the dissolved oxygen at above 30 per cent, better above 50 per cent of saturation at all times. Not all textile wastes require purification, and great savings may be made by separating in the mill the harmless wastes from those which should be purified. In some plants these latter amount to 75 per cent of the whole volume. Many streams require plain subsidence alone; others require treatment on filters. So far, single filtration has not been always effective, due to the antiseptic character of some of the wastes to be treated, or to the kinds of substances discharged.

While subsidence followed by double filtration has produced excellent results, the process is expensive, and it is unfortunate that the activated sludge process is not applicable to a waste with suspended solids of so low a specific gravity as that in certain textile wastes. —Robert Spurr Weston, *J. Boston Soc. Civil Engs.*, 16, 6: 358–373 (June), 1929. Abstr. L. W. Van Kleeck.

How Wilmington (Del.) Has Raised the Sanitary Standards of its Nine Swimming Pools—During the 1928 season excellent results were obtained in improving the condition of Wilmington's five municipal pools and four private pools by the use of a rating scheme based entirely on the chemical and bacteriological condition of the water. This method, however, had disadvantages such as excess chlorination, in pools of inferior construction, in an effort to secure a high weekly rating. As a result in 1929 the Board of Health adopted a score sheet based on the following items: equipment 100, management 200, water in pool 200.

Each section is subdivided and a perfect percentage allotted to the various items. The total score is divided by 5, giving 100 for a perfect score. It is claimed by the author that the system has been very successful in raising the swimming pool standard in Wilmington. —Russell T. Des Jardins, *Am. City*, 41, 2: 154–155 (Aug.), 1929. Abstr. J. B. Harrington.

INDUSTRIAL HYGIENE

EMERY R. HAYHURST, M. D., AND LEONARD GREENBURG, PH. D.

The Present Status of Industrial Medicine—The highest estate yet reached by industrial medicine was attained during 1917–1919. At this time (1929) stratification has occurred so that there are recognizable two large fields of related endeavors, "industrial hygiene" and "case handling industrial medicine." The prime activity of the first of these has been numerous special investigations related to hazards, research, and constructive work in which unfortunately participation by organized medicine has frequently been missing so that at the present time there is a definite drift on the part of the industrial hygienist away from organized medicine, where he rightfully belongs. A lower non-medical stratum, not praiseworthy, has appeared, as exampled by the optometrists who make extensive industrial surveys seeking patronage from the visually deficient. In an instance under the author's observation, among 396 clerks wearing glasses, 60 per cent either obtained no visual betterment or vision did not reach 20/30.

"Case handling industrial medicine" embraces primarily routine care of the injured, minor physical relief, and physical examinations. Within this division there is much stratification, most of which is not industrial medicine or at least not good industrial medicine. There are recognized the following subdivisions:

The physician with a practice that includes industrial cases

The petty industrial emergency hospital, usually looking to the compensation boards for payment for services and doing capable and often profitable work but seldom anything constructive within the factory

Dubious gratuitous services, hoping to profit through an increase in private work

Part-time medical services for small plants, a most important demand since 99 per cent of all plants are really small ones, i.e., employing less than 500, while in fact 49 per cent employ less than 6. (Often these efforts give praiseworthy service but practically may not function to the advantage of anyone since low salaries are paid, physicians are often not qualified, and a routine of minor emergency work is performed, as for example when a plant, perhaps even with 1,000 employees, seeks to meet its medical obligation through the services of a physician 1 hour daily.)

Full-time medical services with untrained personnel

Similar services with trained personnel which may or may not be permitted to practice real industrial medicine

Medical departments maintained by labor organizations such as painters' unions—often a commendable endeavor though not industrial medicine

Medical service extended to entire families which is really community medicine

The objectives and standards of good industrial medicine, and the qualifications of physicians to perform the same, are next discussed in detail with an emphasis upon the fact that this is a specialty in medicine and that real industrial physicians are specialists and therefore need the offered extra form of university training and much experience. The few persons trained by institutions have readily found employment since industrial managers are recognizing the advantages of such training. There are listed 11 professional or official organizations and types of institutions now promoting industrial hygiene, and 13 administrative groups (not including health

departments) which are interested in the subject.

A "synthetic" manufacturer and a "synthetic" workman each give their respective views supporting the demand for industrial medicine (a very interesting summary).

Unfortunately, medical organization at present is so much in dread of "state medicine" that all extensions of industrial medicine, as, for example, to increase the lists of recognized occupational diseases, are opposed. This very lack of flexibility on the part of the medical profession may prove to be an outstanding factor in forcing on socialized medicine.

Let it be said that unlimited coverage for proved, characteristic, occupational diseases is coming. Its embracement may be expected by several additional states within the next six years. . . . Moreover, the medical profession should not lend itself to the jokers introduced into legislature to give the appearance of the extension of compensation coverages in lieu of embracing items of real significance.

In the entire field of industrial compensation there are outstanding drawbacks of special concern to the medical profession, e.g., there are few compensation boards with competent medical advisers, and claims are being settled by non-medical officials, grossly incompetent to pass on medical matters. Here, an alert medical profession may go far in the eradication of such sources of medical malactivity.

The author next lists 10 types of objectionable features of industrial medicine when conducted under undesirable conditions and 12 precepts which comprise a suggested attitude for organized medicine toward industrial medicine. (Five pages of discussion follow. The paper was read at the Annual Conference of Secretaries of Constituent State Medical Associations, held at Chicago, Nov. 15–16, 1929.)—Carey P. McCord, *A. M. A. Bull.*, 25, 1: 11–21 (Jan.), 1930.

Will the Inhalation of Siliceous Dusts Activate a Partially Healed Focus of Tuberculous Infection?—Experiments were made with 95 guinea pigs which were infected by inhalation with a low virulent strain of tubercle bacillus. Groups of animals were then exposed to inhalations of quartz, granite, or carborundum dusts for periods varying from 54 to 206 days. The concentrations of the dust in the chambers ranged from 640 million particles to 957 million particles per cu. ft. of air. Death of the animals generally occurred between 200 and 400 days after commencing the exposure but 2 of the carborundum animals survived to be killed on the 1,385th day.

The virulence of the tubercle bacillus used has been studied for about 12 years at the Saranac Laboratory. Quartz and carborundum dust have regularly caused the tubercular infection to become progressive in each animal exposed. Granite was much less active and no alteration was observed with marble dust or bituminous coal dust. In fact, the latter seemed to accelerate healing. Asbestos dust exerted a stimulating effect only in an occasional animal.

Quartz, granite, and carborundum dusts may reactivate and cause tubercles to spread which are as old as 200–400 days.

There was noted a high incidence of complicating pneumonia particularly in the granite group, which was caused by the Friedlander bacillus.

The character of the lesions produced by reactivation both in the undusted control animals and in those exposed to a prolonged inhalation of dust is described. Carborundum, which is the carbide of silicon, and which theoretically contains very little crystalline silica, is very active (in breaking down the tubercles). Apparently, quartz reaches the interior of the tubercle in

greatest quantity; next comes carborundum and the least amounts are granite dust.

The experiments have proved that in the guinea pig it is possible to light up a quiescent focus of tuberculosis and to render it progressive. However, this does not necessarily indicate that the same thing occurs in the human being, but the truth can be learned by careful clinical radiographic and post-mortem observations.—Leroy U. Gardner, Saranac Laboratory, *Pub. Health Rep.*, 45, 6: 282–288 (Feb. 7), 1930.

A New Journal in the Field—The *Archiv für Gewerbepathologie und Gewerbehygiene* appears for 1930, the first two monthly issues in a single volume, the publisher being Julius Springer, Berlin. The *Journal* is under the coöperative effort of the following: Charles Badham, Sidney; L. Carozzi, Geneva; B. Chajes, Berlin; L. Devoto, Milan; Cecil K. Drinker, Boston; H. Engel, Berlin; F. Flury, Würzburg; H. Fühner, Bonn; D. Glibert, Brussels; Leonard Greenburg, New Haven; M. Hahn, Berlin; K. Hamel, Berlin; Alice Hamilton, Boston; E. R. Hayhurst, Columbus; T. C. Houghten, Pittsburgh; M. Kaplun, Moscow; R. Kockel, Leipzig; F. Koelsch, Munich; Thomas Oliver, Newcastle Upon Tyne; D. Pometta, Lucerne; R. R. Sayers, Washington; M. Sternberg, Vienna; H. M. Vernon, Oxford; and C.-E. A. Winslow, New Haven, and under the editorship of Dr. L. Teleky, Düsseldorf, and Professor H. Zangger, Zürich.

The articles in the first volume include the following:

Introduction, Dr. H. Zangger, pp. 1–51 (in German)

Reflections on Certain Problems of Industrial Medicine, Prof. Dr. Luigi Carozzi, pp. 52–66 (in English)

Pulmonary Asbestosis, A Socio-medical Study, Sir Thomas Oliver, pp. 67–76 (in English)

Concerning Modern Organic Solvents, Heinrich Zangger, pp. 77–196 (in German)

Observations upon Arsenic Poisoning, Dr. Winfried Grassmann, pp. 197–202 (in German)

Climate and Work, Dr. Walter Strauss, pp. 203–239 (in German)

A Report upon the Question of Occupational Myopia, Dr. L. Teleky and Dr. Adolf Thier, pp. 240–270 (in German)

The Differential Diagnosis of Silicosis by X-ray Pictures and an Investigation of the Hazards in Sandblasters, Dr. Lochtkemper, with 18 illustrations, pp. 271–302 (in German)

The set-up of the *Journal* shows extreme care; the type is very legible; and the paper of fine quality, which carries the various illustrations and tables well. The price is 38.60 marks.—Julius Springer, Publisher, Berlin, W 9, Linkstr. 23/24.

Industry in Relation to Personal and Public Health—This is a very interesting historical discussion of the irregular improvement of the health of workers from prehistoric to present times. Probably silicosis is the oldest occupational disease, as it may be imagined to have existed among the flint implement makers in the prehistoric factories, such as those found at Grime's Graves near Brandon in Suffolk. Arguments are adduced to show that the great empires of the world have fallen one after the other, through the introduction of slave labor with the failure to protect the health of those employed.

It is recognized that industry is the instrument for preserving the health of nations. "In the sweat of thy face shalt thou eat bread" was in very truth a blessing and not a curse hurled at Adam. Intelligence cannot create industry without industry reacting and stimulating intelligence. Indeed industry may fairly be said to be the instrument used by nature for developing intelligence and preserving health.

The influences of climate, the introduction of water power, wind power, and of steam are reviewed, the latter in par-

ticular having at first led to the misuse of workers, but now labor saving devices are steadily eliminating poorly paid manual effort, while complicated processes are ever more and more being introduced into industry which call for specially skilled operatives. The future of the human race cannot be foreseen, but it will be determined by man's intelligence acting through his industries, until barren places of the earth are made fertile and come to support populations, kept healthy by physical and mental activities developed in the pursuit of well ordered industry.—E. L. Collis, *J. State Med.*, 37, 3: 125–137 (Mar.), 1930.

Some Facts about Pennsylvania Women Wage Earners—In a series of charts based on figures of the 1920 United States Census, with accompanying tables applying to the nearly three-quarters of a million women who are gainfully employed, or 1 out of every 5 women in the state, the Pennsylvania Bureau of Women and Children finds in brief as follows:

1. One-fifth of the employes of the state are women.
2. The percentage of women employed has increased from 10 in 1870 to 21 in 1920.
3. The percentage by occupations in 1920 was: domestic and personal service, 25; clerical occupations, 18; "other manufacturing occupations," 15; textiles, 12; professional service, 11; trade, 10; "other non-manufacturing occupations," 4; clothing, 4; and food, 1.
4. In seven cities, all located in the eastern half of the state, more than one-fourth of the women are gainfully employed.
5. Nearly one-half of the women employed are under 25 years of age, while less than one-fourth of the men are under 25 years of age.
6. Among women gainfully employed, 88 per cent are native born and 12 per cent foreign born.
7. Native born women of foreign or mixed parentage are more likely to be gainfully employed than either foreign born women or native women of native parentage.
8. Less than one-fifth of the gainfully employed women are married.
9. Practically one-half of the single, widowed, and divorced women are gainfully employed; less than one-tenth of all married women are employed outside their homes.
10. Married women are more generally employed in domestic and personal service than in any other important occupational division. The highest proportion of single, widowed, and divorced women are employed in clerical occupations.
11. Only in domestic and personal service are more women employed than men. In manufacturing and mechanical industries in which one-third of the women of the state are employed, 16 per cent of the workers are women.
12. Next to household servants, the greatest number of Pennsylvania women are employed as textile operatives.

—Bureau of Women and Children, Dept. Labor & Industry, Commonwealth of Pennsylvania, Harrisburg, 1930, 23 pp.

Women in Trade Unions—A summary of a study of the German General Federation of Trade Unions emphasizes the increasing number of women workers in industry. In typical trades they have the following percentages according to the annual reports of the unions for 1928: tobacco workers 77.5; bookbinders 67.9; printers 64.1; hatters 63.3; textile workers 57.8; clothing workers 48.1; and shoemakers 44.3.

The percentage of women is likewise increasing in those unions in which their number is usually small, e.g., in the metal industry from 11.1 per cent in 1925 to 15.2 per cent in 1928, etc.

The unions provide a program of education for new workers, while the women are taking an important part in works councils. Owing to the continual influx of women in industry the wages of women workers are much lower than those of men, but considerable progress has been made in raising them.

In regard to maternity protection it is found that women are making increasing use of the right to leave work 6 weeks before confinement, but when engaged on piece work they are much less

willing to do so. However, under the decree of May 18, 1929, by which the allowance for the 4 weeks preceding confinement is increased to the equivalent of three-quarters of the basic wage, this condition is being bettered. There is often difficulty in carrying out the provisions relating to the 2 half-hour intervals for the nursing children. In some shoe factories the women have refused to take their infants to the nurseries provided because their clothing is saturated with chemicals. The Saxon Government has made extra monetary inducements to every pregnant woman to leave her work for 8 weeks preceding confinement.—*Indust. & Labour Inf.*, XXXIII, 7: 220–222 (Feb. 17), 1930.

Sugar—The per capita consumption of sugar in the United States in 1925 was 107 lb., compared with 8.8 lb. in the year 1823. The derivation of the sugar used in the United States according to Senate discussions shows as follows (percentages): Cuba (cane) 58.3; United States (beet) 15.39; Hawaii (cane) 10.89; Porto Rico (cane) 8.10; Philippines (cane) 5.51; and Louisiana and Texas (cane) 1.24. In 1929 it was estimated that 1,250,000 short tons of beet sugar were produced in the United States. Very little of the imported sugar is refined as received, so that it has to be re-melted and refined after reaching the country.

There are, then, in the United States 103 beet sugar factories, operating in 18 states, but especially concentrated in Colorado, Utah, Michigan, California and Idaho. There are also 60 "sugarhouses" in Louisiana and eastern Texas, grinding sugar cane but not producing the refined article, and 21 great sugar refineries located mostly at seaport cities. According to the Census of Manufactures for 1927, 79 beet sugar factories employed 8,872 workers, 53 cane sugar factories (not refining) 1,225 workers, while 21 cane sugar refineries had 15,742 employees. (The paper then takes up a detailed discussion of manufacturing processes with resulting health hazards, giving a classification of jobs for (1) Beet Sugar, (2) Sugarhouses and (3) Sugar Refineries.)

Potential health hazards of the industry are discussed by Dr. Carey P. McCord with particular attention to sugar as a specific hazard in reference to "sugar dermatitis," the "sugar mite," explosions, and miscellaneous chemical hazards (carbon monoxide, sulphur dioxide, lime, chlorine, carbon dioxide, ammonia and ammonia cyanide, alcohol fumes, inorganic dusts such as charcoal, sulphureted hydrogen and mineral acids), and mechanical hazards.

In a general estimation of the situation, "it is maintained that this industry affords considerable opportunity for occupational impairment of the health of exposed workers." While few specific occupational diseases occur, illy-defined impairments and early degenerative diseases are the ones most inimical to health and such are especially associated with the high temperatures, wetness, and high humidity.—*Industry Report,* Retail Credit Company, Atlanta, Ga., V, 2: 13–24 (Feb.), 1930.

Composition Roofing—This treats of the manufacture of asphalt and asbestos roofing but does not cover such products as wood shingles, tile and metal roofing of various types. There is the usual job classification in which the hazards of each are discussed as well as the commoner occupational diseases which are specified as follows, at least potentially: asbestosis, silicosis, tar poisoning, tar dermatitis, poisoning from "cutting back" solvents, carcinogenetic action of roofing materials, and various other effects of toxic and miscellaneous hazards.—*Indust. Rep.*, 5, 3 (Mar.), 1930. Retail Credit Co., Atlanta, Ga.

FOOD, DRUGS AND NUTRITION

WALTER S. FRISBIE

Cereals and Rickets. III. The Comparative Rickets-Producing Properties of Corn, Wheat, and Oats, and the Effect of Irradiation and Mineral Supplements—This records an extensive series of experiments on use of activated cereals on rats begun in 1924 and in which a total of 230 rats were employed. Preliminary experiments indicated that untreated cereals were definitely rachitic and at this time a report of an investigation was received stating that cereals do not produce rickets in proportion to their calcium and phosphorus deficiency, and further that oatmeal was the most rachitic and white flour the least, contrary to the evidence found in the preliminary experiments. In these experiments in 1924, young rats were getting an experimental ration of a single cereal for 5 weeks; the rats were then killed and the femurs analyzed. The percentage of ash in the femurs was highest for wheat and lowest for corn meal, rolled oats being intermediate. The experiment definitely indicated that all cereals were ricket producing.

In 1925, experiments were conducted to compare corn, wheat, and oats. The cereals for controls were irradiated in thin layers for 30 minutes by a quartz mercury vapor lamp. In this experiment, the growth on non-irradiated cereals was practically the same, while on the irradiated ration the wheat was superior. Yellow corn was the least favorable. In both these experiments, calcium carbonate at 3 per cent level was included in the feed.

In 1925 and 1926, corn, wheat, and oats, both irradiated and non-irradiated, were fed with 0, 1, 2, and 3 per cent calcium carbonate addition. In this experiment some rats were fed a ration in which the phosphorus intake was equalized by the addition of H_3PO_4. In this experiment vitamin A deficiency was manifested. In spite of this, good rate of growth and maintenance prevailed through the 5-week period. Growth on rolled oats was less than on wheat and corn in which the poor consumption of this cereal was a factor. Calcium deficiency of the cereals was evident since when $CaCO_3$ was added up to 1 per cent, growth increased but did not increase with additional calcium. Phosphorus addition made no material change. Wheat was superior in bone production followed by rolled oats and yellow corn in the same relation with the ash in the femurs.

In the experiments in 1926 and 1927, an attempt was made to measure carefully the rations consumed by limiting the intake to that which was all entirely consumed by any one individual. Corn, wheat, and oats were ground to an impalpable powder and fed with wheat gluten and sodium chloride and calcium carbonate. In the rolled oats it was found that these were not consumed readily and the uniform intake could not be insured. The wheat increases were found uniform in untreated cereals without carbonate additions. Irradiation, as in other experiments, made definite growth increases. With calcium carbonate addition there was less increase in weight on the corn diet. In general, the effect of irradiation was to equalize the calcification, but without calcium supplements the percentage of

ash was not increased. Supplementary experiments were run to account for the poor consumption of rolled oats, which seem to preclude the vitamin A deficiency and indigestibility as factors. The opinion is offered that a deficiency of vitamin G may be involved.—H. Steenbock, Archie Black, and B. H. Thomas, *J. Biol. Chem.*, 85: 585 (Jan.), 1930.

The Effect of Vitamin D and of Reaction of Diet upon Response to Parathyroid Extract—Recent investigators have reported the prevention or postponement of tetany by cod liver oil or irradiated ergosterol in parathyroidectomized dogs. Others have found that even massive doses of irradiated ergosterol afford little protection. Milk, lactose, calcium lactate, acetate, or carbonate and ammonium chloride, as well as parathyroid extract, have been found to prevent tetany in these cases. In the absence of records as to the effect of parathyroid extract on animals deprived of vitamin D this work was undertaken on young vitamin D-free dogs.

Pups 5 weeks of age were placed on a low phosphorus normal calcium diet. Two in each litter received vitamin D. All grew, but the other animals developed signs of rickets. At the fourth month parathyroid injections were begun when definite rachitic symptoms including lowered serum calcium and phosphates were evident.

One of the dogs receiving the vitamin D complement (1 mg. irradiated ergosterol daily) succumbed to hypervitaminosis D. There was great increase in serum calcium while the corresponding vitamin D-free dog, with neutral urine, showed only slight increase in serum calcium. A dog, vitamin D-free, urine acid, showed less response, but the dog with urine alkaline, vitamin D-free, died of overdosage, indicating the alkaline reaction of the urine as contributing to susceptibility which was confirmed by supplementary experiments.

Single doses of parathyroid extract had the same effect on young dogs which had been given vitamin D either as cod liver oil or irradiated ergosterol. With a diet producing Ca : P ratio of 1.64 with irradiated ergosterol insufficient to prevent rickets, dogs succumbed to parathyroid extract injections but on a lowered vitamin D-free diet showed no ill effects. The increased response to parathyroid administration with sodium carbonate sufficient to make the urine alkaline was observed both in young and adult dogs. The amount 0.5 gm. per kilo per day of sodium carbonate is sufficient for this purpose. With ammonium chloride substituted for sodium carbonate only slight response is noted. In view of the reports of the use of cod liver oil or ergosterol and calcium salts in the treatment of hyperparathyroidism the authors conclude that these experiments would indicate caution in such treatment.—Agnes Fay Morgan and E. Alta Garrison, *J. Biol. Chem.*, 85: 687 (Feb.), 1930.

Irradiated Products and the Public Health—This is a report of the recommendations adopted by the Conseil Superieur d'hygiene publique, of which the authors are members. The report is divided into two parts—a discussion of the adverse effects encountered in the use of ultra-violet rays, and the use of irradiated food products. In the latter case, there is quite a complete summary of all of the recent work both in Europe and America on the danger of hypervitaminosis by the administration of irradiated ergosterol.

Reference is made to the warning of the Council of Pharmacy and Chemistry of the American Medical Association relative to the care which should be taken in recommending this new treatment. Reference is also made to the

reports of the toxic symptoms demonstrated by the use of irradiated foods, in particular irradiated milk.

In conclusion, in view of the diversity of the origin and preparation of irradiated products and the changes that take place on aging, it is considered indispensable that the medical profession be exactly informed on the following points: the procedure employed in obtaining the irradiated product, the antirachitic power of the drug, and finally, the date of manufacture. It is important that this information appear on the label and circular and that the date of the manufacture be printed on the case containing the boxes or bottles of irradiated products.

These irradiated preparations should only be distributed by pharmacists.—D. F. Bordas and Jules Renault, *Ann. des Falsifications et des Fraudes*, 253: 37 (Jan.), 1930.

The Escherichia-Aerobacter Group as an Index to Proper Pasteurization—The coli bacillus, because its thermal death-point closely approaches the pasteurization temperature, has been often used as an index to the efficiency of pasteurization. This paper reports experiments to ascertain whether or not there is a relationship between counts of *E. coli* and *E. aerogenes* and the efficiency of pasteurization. One hundred samples of milk were inoculated with pure cultures of *E. coli* and heated for 30 minutes at temperatures used in commercial pasteurization. It was found that *E. coli* survived the heating process in 32 per cent of the samples. As a result of experiments on the acclimatization of *E. coli* to higher temperatures by using resistant individuals selected on successive heatings it was possible to raise from 145° F. to 148° F. the absolute death-point of a culture of *E. coli* the usual or majority death-point of which was 144° F. for 30 minutes.

It is concluded that organisms of the Escherichia-Aerobacter group may survive in milk that has been properly pasteurized and that, therefore, the coli test cannot be used as a true index to proper pasteurization.—E. Arthur Beavens, *J. Dairy Sci.*, 13: 94 (Mar.), 1930.

An Outbreak of Food Poisoning Caused by Salmonella Enteritidis—An outbreak of food poisoning following the ingestion of cream puffs infected with *S. enteritidis* is reported. Ninety people who were made ill displayed typical symptoms of acute gastroenteritis. The average time of appearance of the clinical symptoms was 10 hours after ingestion of the pastry. Delayed symptoms were noted in three of the cases which were mild, illness appearing 24 hours after ingestion. In one case symptoms appeared within 4 hours while in 4 other cases within 6 hours. Subnormal temperatures were noted during the acute stage of the illness followed by slight temperature later in the illness (100–101° F.). All patients recovered.

Salmonella enteritidis was recovered from the cream filling of the pastry; from excreta of mice in the bakery as well as from the intestinal contents of mice trapped in the bakery. Intraperitoneal injections of the recovered organism into mice and guinea pigs cause the death of the animals. Similar injections of killed cultures and culture filtrates both heated and unheated cause death to these animals. Feedings of viable and killed cultures of a number of rabbits and guinea pigs were negative.—Rigney D'Aunoy, *J. Infect. Dis.*, 45: 404 (Nov.), 1929.

PUBLIC HEALTH NURSING

EVA F. MACDOUGALL, R. N.*

The Rural Nurse as a Case Worker—Katherine D. Hardwick, Director of Social Work, Simmons College, has written a splendid article on the pioneering jobs in social work that a rural public health nurse is called upon to do.

As a result of returns from a questionnaire sent to 63 rural nurses in New England, Miss Hardwick summarizes the situation as follows:

> The rural nurse as a case worker—Fifty-three of the nurses questioned feel that they bear the brunt of the case work.
>
> Types of problems most frequently indicated with some suggestions for case work procedure—Though the number of cases in rural districts are limited, they usually represent problems most difficult to solve and are most time consuming. The average public health nurse is seldom fully equipped to solve these problems. What shall she do?
>
> 1. Leave them alone? Impossible!
>
> 2. Form a subcommittee of her nursing committee to take charge of social problems? According to answers received this is not advisable.
>
> 3. Meet pressing needs by giving material aid—sometimes out of her own pocket—or organize a relief fund? The experienced nurse knows that relief alone is not the whole story. She must know the cause of the family's difficulty before she prescribes for it.
>
> 4. Should she then become a social case worker? Can she? Aside from lack of training, has she the time? Will she not in many instances jeopardize her influence as a public health nurse for the entire community because of the general prejudice against social investigation?
>
> 5. And lastly—does the public health nurse really want to do social case work?

Miss Hardwick feels that the public health nurse has been a trail blazer, and social case workers owe her a debt of gratitude. Why not joint consideration of the problem? Is there no way whereby a competent case worker might help the nurse by sharing experiences and training? Miss Hardwick further suggests that perhaps a joint study committee of the two groups would add to our knowledge of rural problems and strengthen both professions.—Katherine D. Hardwick, Trail Blazing in Social Work, *Pub. Health Nurse,* Mar., 1930, pp. 115–121. H. L.

To Urban Official Public Health Nursing Agencies—The National Organization for Public Health Nursing committee to study the usefulness, function, constitution and methods of appointment of committees on public health nursing advisory to the public authorities, is most anxious to get in touch with urban official agencies having such a committee. If you are in an official organization which has a lay advisory committee for its nursing service, will you please notify the chairman of this study committee.—Agnes J. Martin, 419 City Hall, Syracuse, N. Y. H. L.

The Private Physician and the Public Health—The Bellevue-Yorkville Health Demonstration in New York City has arranged to offer—free of charge at first—the services of a qualified public health nurse a half day a week to each of a selected group of private physicians who wish to put more emphasis in their own practice on preventive work—such as health examinations and supervision, immuniza-

* Please send printed matter or other material relating to public health nursing to Eva F. MacDougall, 126 State House Annex, Indianapolis, Ind.

tions and the like. Medical laboratory service for private physicians will be given free to patients needing it and at a moderate charge to those who can afford to pay. This experiment was suggested by Dr. Shirley Wynne (New York City Health Commissioner) as a means of furthering coöperation by private practitioners in preventive work for public health.—Preventive Private Practice, *The Midmonthly Survey*, Mar., 1930, p. 712. H. L.

Public Health Nursing in a City Board of Health—From the annual report of the Detroit Department of Health we get a picture of how one large city health department organizes its public health nursing division.

Although nurses are assigned to the different divisions in the department—the School Health Service, Child Welfare, Communicable Disease, Special Investigation, Social Hygiene, Health Education, and several others—the nurses, nevertheless, maintain their identity through the Division of Nursing.

Field nurses are responsible to supervisory nurses in each division; the supervisors, in turn, are guided and directed by the Superintendent of Public Health Nursing who is chief of the Division of Nursing. All rules and regulations pertaining to conduct, efficiency records, employment of new nurses, and question of education, are carried out by the division. A Nurses Council, members of which are elected from each of the various divisions, has been particularly active in stimulating a desire for providing facilities for education and in developing the general interests of public health nursing.

The city as a whole is cared for on the specialized plan of nursing; there are, however, two districts where a generalized program is being carried on. Nurses entering the Department of Health are given public health training—as very few of them have had any previous public health experience—though no academic credit is given for this training. However, through the coöperation of the College of the City of Detroit, a chair of public health nursing has been established; and the Department of Health, when in need of new nurses, will now be able to procure nurses with some public health training. This course will also give members already in the employ of the Department of Health an opportunity to take extra courses for which they will receive academic credit.

The present population of Detroit is estimated to be 1,429,000. The Department of Health employs 348 nurses—including one superintendent, 33 supervisors, and 314 field nurses. There is a salary range for field nurses from $2,040.00 to $1,560.00 a year. The total cost (salaries) for 348 nurses in 1929 amounted to $666,060.00. The nursing service cost approximately 46.6 cents per capita.—*City Health*—Bulletin Detroit Department of Health, Annual Report, Jan., 1930. H. L.

EDUCATION AND PUBLICITY

EVART G. ROUTZAHN*

Health Education in Clinics—Please tell what you do and send samples of printed matter and offer the loan of special devices. For use the morning of Monday, June 9, 1930, in the Health Division, National Conference of Social Work. Address Evart G. Routzahn, 130 East 22d St., New York, N. Y.

Reports of Health Surveys—An examination of several hundred survey reports—inclusive social surveys and specialized studies—shows a wide variety of cover and title page arrangement and of other "front matter." The recently published Health Inventory of New York City, the Welfare Council report, is almost ideal in this respect. The main facts as to its nature, the authors, the local sponsoring organization, the city of publication, and the scope of the study can be gathered quickly at a glance. One weakness is that the date of the study is buried near the bottom of the second page of the preface. As there stated, the data are for 1926, or for 1927 when the other were not available. But some dated 1928 material appears in the text, and a number of the tables, especially those "for one year," are not dated. Otherwise the "front matter" offers what the student and the librarian need for rapid, accurate handling of reports. In contrast many health reports offer needless problems to cataloguers and bibliographers. Particularly when surveys are made by outside agencies it is desirable that the local distributors of the report should be identified. When, as in the case of Montreal, a special continuing group has been formed, the address of its executive center should be indicated. No local citizen, whose interest has been aroused, should be in doubt as to where to go with questions or offers of service.

What Topic and When?—Have you been reading in this department the collections of topics presented by radio, press releases and monthly bulletins?

Does the diversity of theme suggest questions as to where we are going and how much we are accomplishing? Are there too many topics? Do we present any one topic enough times and in enough different forms to get somewhere in the minds and habits of our constituencies? Is there team-play in any states—between the several state health groups and the different types of local health agencies? Is coöperation in making more of a few topics desirable? Is it practicable? If desirable and practicable what are we doing about it? Whose responsibility is it, anyway?

International Health Exposition—This department of the JOURNAL is delighted that so many public health workers will visit the International Health Exposition at Dresden, and the great permanent Social Museum at Munich.

Graphic presentation of ideas, facts and figures should be bettered amazingly as a result of those visits.

Program committees for national, state, and local groups of health and

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York, N. Y.

social welfare groups are urged to give space on programs for a report on graphic presentation as it is done in Germany.

Health Education, Etc.—The following will be discussed in various groups during the National Conference of Social Work (Address: 277 East Long St., Columbus, O.), June 9–14, 1930, in Boston: Clinics as Centers of Health Education, The Interpretation of Social Surveys, Philosophical Basis of Social Work Publicity, How to Develop a Favorable Public Attitude toward the Trained Social Worker, How Evaluate Newspaper Publicity in Social Work? How Make Statistical Data Interesting? What Should the Publicity Worker Know about Social Work? What Constitutes a Reasonable Budget for Publicity? The Factual Basis of Social Work Publicity, Putting Over Probation—The Education of the Public, Publicity Technique Brought Up-to-Date, Putting Life into the Case Work Speech, Relations of the Chest Publicity Director to the Agencies, Raising Money by Mail, National and State-wide Distribution of News, Question and Answer Meeting, Outstanding Publicity Ideas of the Year, Motivation of Public Response to Social Information and Appeals, Division of Responsibility between Community Chests and Member Agencies in Informing the Public, Out of Focus (distorted publicity—with sound), The Year's Publicity Record (Harmon awards).

The education-publicity headquarters will be on the stage of the ballroom in the Statler Hotel.

News Releases—What do you think of this array of topics?

City health departments: Detroit—Early care for tuberculosis, Responsibility for the health of the school child, Scarlet fever prevention; New York—Dr. Darlington as health commissioner, citizens as unofficial inspectors of neighborhood conditions, public health nursing, business and health, 45th anniversary of Dr. W. H. Guilfoy with city department, weekly report on city's health.

State health departments: Connecticut—Tularemia, New eating place regulations; Illinois—Vitamin D and perfect teeth, Druggists warned against prescribing remedies, Household milk pasteurizing process; Iowa—May Day, Diphtheria; Maryland—Typhoid; North Carolina—Smallpox; Virginia—Open season for flies.

U. S. Public Health Service: Dust-removal systems in granite cutting, Leprosy in the U. S., Prevention of scarlet fever, Malaria in U. S., Control in interstate spread of disease.

American Child Health Association—Clip-sheet on May Day; National Society for Prevention of Blindness—League of Nations' study of motion picture effects on children's eyes.

New Jersey Tuberculosis League: Clip-sheet—Infants protected by health campaign, Tuberculosis takes heavy toll from colored children, Suitable clothing for spring, "Broken homes" through disease, Study of child tuberculosis cases, Lack of rest, Child health spring campaign, Invalid relatives imperil childhood, Nurses in spring health campaigns.

True vs. False Teaching—The use of the schools by manufacturers was discussed by Dr. H. E. Barnard, director of the President's White House Conference on Child Health and Protection, before the Department of Superintendence, National Educational Association. Dr. Barnard said:

> Every idea in the field of nutrition has promptly found its way into the schoolroom and carried with it fads and foolishness to command the attention of the teacher and her children until the next new thought supplanted it.

We have used the schoolrooms as a means by which the millions of dollars spent in advertising tooth paste can be translated into profits by committing every school child to the now recognized fallacy that tooth decay is definitely related to tooth paste.

If the tooth brush is used as a symbol for oral cleanliness, just as soap is now made to stand for the sanitation of the outer surfaces of the body, we should by all means continue to urge its use, but when tooth brush drills are premised upon unsound scientific data it is time for the teacher to recognize the difference between fact and propaganda.

Without doubt we have done many things that have been a little help in establishing health knowledge and health behavior. Now it is high time to find out what to do that will be of the greatest help and how to fit it intelligently into our educational system.

Awards for Health Material at Boston—Health agencies should be well represented in the awards to be announced in Boston, June 9–14, by the Social Work Publicity Council, 130 East 22d St., New York, N. Y. *Write for the addresses to which to mail entries in the following classes:* Annual Reports, Letters, Newspaper Articles, Published Photographs, Published Statistics.

Dr. Biggs Believed in Health Education—Among public health objectives as outlined by Dr. Herman M. Biggs in his last address, May 17, 1923:

Provision of systematic instruction in elementary physiology and hygiene and in health habits in the primary and secondary schools, and more extensive instruction in the normal schools and universities.

Postponement of the age at which death occurs from the cardiovascular diseases and the other diseases of later life, through physical examination and instructions as to methods for retarding or arresting their progress.

The prevention by education and law enforcement of new infections in the venereal diseases, and provision for more adequate treatment of syphilis.

The extension of the educational work of the public health authorities as a most effective means to promote the preservation of health and the prevention of disease.

HONORABLE MENTION

To Racine (Wis.) Board of Health: for its successful mimeographed annual report for 1929.

To the State Charities Aid Association of New York: for its 1928–1929 annual report—for its title, "A Year of Citizen Service in Health and Welfare"; the table of contents, illustrations, and general make-up.

To Welfare Council of New York City: for the cover, title-page and other "front matter" of A Health Inventory of New York City—for completeness and clarity of arrangement.

To Illinois Department of Public Health: for annual report with an index (but lacking table of contents); for numerous diagrams and statistical maps.

REPORTING

A Public Health Program on a Fact Basis. Cleveland (O.) Health Council, 715 Superior Ave., N.E. A 4-page folder listing "Fact Finding Studies," with the corresponding list of "Action Based on Results." *Free.*

A page statistical report in the 1929 annual report of the Infant Welfare Society, Chicago, Ill., is divided under "Infant," "Pre-School," and "Prenatal." *2 cents a copy.*

The annual report of a county nursing service in New York contains no office address, no address for securing service.

Milestones in Health and Welfare, a summary of 57 years of work by the State Charities Aid Association, 105 East 22d St., New York, N. Y. 28 pp. *Free.* Should be suggestive to a local, state or national agency in recording past activities.

Telling the Story in Graphic Form, by Charlotte Heilman. *Red Cross Courier,* Washington, D. C., March 15, 1930. Describes and illustrates 8 kinds of data a visiting nurse association may

express through diagrams—for annual report or office use. *Free.*

Its Major Activities. Connecticut State Dept. of Health, Hartford, 1929. 12 pp. Every bureau and division is presented in concise paragraphs as follows:

Bureau of Public Health Instruction—

Keeps the department activities to the forefront in all parts of the state and spreads health information through the following activities:

Supervision and preparation of weekly and monthly health bulletins

Placing and distributing health educational material such as moving picture films and equipment, health posters and health leaflets

Making arrangements for lectures and public health courses

Planning and installing health exhibits

Reviewing new illustrative material and new methods of presentation and recommending the purchase of new equipment or the adoption of new methods to further health educational work

Keeping in close touch with health leaders and local organizations to encourage a wider use of the department health educational service

Studying local health trends so that the health educational service may adequately meet the needs of local organizations and community groups

Assisting local groups in planning health meetings

Under the supervision of this bureau is carried on through:

Nutrition articles, leaflets, and a nutrition handbook

Lectures and nutrition courses for public health nurses and other leaders

Nutrition exhibits

Advice on nutrition problems in the field

CONTESTS

Listening in on the National Press Club spelling bee prompts me to offer again the suggestion that a health spelling bee contains possibilities!

The ninth annual health poster contest has been conducted by the Anti-Tuberculosis Society of Schuylkill County, Pa. Subject: Nutritious foods.

National Safety Council, Chicago, Ill., is conducting the second Inter-City Motor Vehicle Fatality Contest. Ends August 31, 1930.

A state-wide junior high school essay contest on "Protecting Health in Youth" was a feature of the Early Diagnosis Campaign in Michigan.

The American Eugenics Society, New Haven, Conn., is conducting a competition open to clergymen of all faiths for prizes aggregating $1,000 for sermons on "Religion and Eugenics: Does the Church have any responsibility for improving the human stock?" Closes July 30.

"Minnesota high school girls presented many different interpretations of the pamphlet "It and How," published by the Minnesota Public Health Association, as a part of its teen age campaign, in a state-wide contest just completed." Two prize essays appear in *Everybody's Health,* St Paul. March, 1930. *10 cents.*

The Journal of the Outdoor Life, 370 7th Ave., New York, N. Y., will pay for photographs suitable for publication. To be rated for (1) subject matter, (2) composition, (3) technical excellence. $1.00 to $5.00 for each photograph accepted. *Why not conduct a local competition, sending the winners to the Journal?*

Subjects for Photographs—Human interest scenes showing some phase of cure-chasing. Suggestions include outdoor or indoor scenes for all seasons of the year (not buildings), children, groups of patients doing something such as occupational therapy, taking heliotherapy, walking, listening to the radio, nature study subjects of birds and flowers, or any other scenes typical of life in and about a sanatorium or elsewhere in the life of a cure-chaser. Posed groups looking at the camera have no photographic interest nor value. All photographs in which real people appear must be accompanied by written permission from each of these persons saying that he or she is willing to have the picture published, and also a statement of where the photograph was taken.

Iowa High School Public Speaking Contests. Extension Dept., University

of Iowa, Iowa City, Ia. Describes Iowa High School Debating League. When will we have a health debate contest? *10 cents.*

RADIO

Four Heart Talks, by president of Heart Council, 312 West 9th Street, Cincinnati, O. Listeners were asked to enclose 6 cents in postage. "Nearly 500 requests from 33 states, and requests are still coming."

The "Careful Twins," "Handy Andy" and "Ready Eddy," conduct the Careful Children's Club of the St. Louis Safety Council in a nightly 10-minute period over Station KMOX. Running steadily for 3 years. Club has nearly 500,000 members in 45 states and 6 foreign countries.

A Red Cross Play for the Radio. *Red Cross Courier,* Washington, D. C., March 15, 1930. *Free.* Full script of "One Working Day in Red Cross Service," a 15-minute radio play given by Lancaster (Pa.) Chapter. The announcer carries some of the heavy work in presenting bald facts.

More than 200 stations are using the twice-a-month broadcasts prepared by the U. S. Public Health Service, Washington. *Copies free.*

Every Wednesday, 5 p.m., via Station USYR (Syracuse, N. Y.) the Onondaga Health Association will broadcast the "Live a Little Longer Club."

Every Wednesday, 7:40 p.m., via WGY (Schenectady) New York State Department of Health continues its broadcasting which has been running regularly for several years.

Recent broadcasts include items listed below.

Connecticut State Department of Health: The Health Traffic Officer (the health officer).

New York City Health Department. Sleep and Rest, Help! Police!! I've Been Robbed!!! (health examinations), First Aid, Measles.

New York State Department of Health: The Weather and You, The Milk Problem Boiled Down.

U. S. Public Health Service: The Public Health Nurse.

EDUCATIONAL MATERIAL

Rural Health, by R. A. Felton and N. V. Short. New York State College of Agriculture, Ithaca, N. Y. 38 pp. What can be done; the county health department. Copy largely adaptable to other states. *10 cents.*

National Tuberculosis Association, 370 7th Ave., New York, N. Y. Revised 16-page booklet listing "pamphlets and circulars, books, motion pictures, posters and periodicals" issued by the N. T. A. *Free.*

We list in this section from time to time educational material from commercial sources, usually those free from promotion of individual brands. Some day we hope for the evaluation of such publications and the thorough discussion of the use of material supplied by manufacturers, and the formulation of policies for their use by health workers.

Some Foods for Children (6 months to 6 years). Evaporated Milk Assn., 231 S. La Salle St., Chicago, Ill. *Free.*

The Cause and Prevention of Tooth Decay. 8 pp. Kolynos Company, New Haven, Conn. *Free.*

Household Refrigeration Bureau, National Association of Ice Manufacturers, 51 Chambers St., New York, N. Y. Series of pamphlets on the care of foods passed upon by a committee including representatives of Bureau of Home Economics of U. S. Department of Agriculture, American Hospital Association, American Home Economics Association, etc. *Free.*

BOOKS AND REPORTS

Recent Advances in Preventive Medicine—*By J. F. C. Haslam, M.C., M.D. (Edin.), M.R.C.P., D.P.H. With a Chapter on the Vitamins by S. J. Cowell. Philadelphia: Blakiston,* 1930. 328 pp. Price, $3.50.

This book is one of the "Recent Advances" series. The author has taken Sir George Newman's *Outline of the Practice of Preventive Medicine* as a framework around which to build his account of the progress in this line of medicine.

Opening with a chapter on eugenics, practically all the problems which are now engaging medical attention are given due consideration. In addition to eugenics, which necessarily brings in much concerning children, some 50 pages are given to childhood, an equal number to milk, and approximately 40 pages to diphtheria and scarlet fever; so it is evident that infancy and childhood get a large share of attention. The special chapter by S. J. Cowell on vitamins is excellent.

We wish particularly to commend the author's condemnation of vaccines against the common cold. The entire book deserves high praise, and only minor points are deserving of criticism. Calmette's vaccine is dubbed "B. C. G.," which is not the name the inventor gave to it. On page 112, he quotes Mummery's last paper as 1926, he having died that year, and on the next page he suggests that the views expressed may possibly not be the latest held by that writer. How shall we find out?

The book is admirably printed and can be recommended without reserve.

M. P. RAVENEL

Psychology and Industrial Efficiency—*By Harold Ernest Burtt, Ph.D. New York: Appleton,* 1929. 459 pp. Price, $3.00.

On the premises that the employee has been hired by the proper scientific procedure, there is to be considered the important question of the most effective method of organizing his work from that point on. Thus the present volume deals with applied psychology in the matter of promoting industrial efficiency, the text being in everyday vocabulary.

The material is divided into 10 chapters, logically arranged with subheadings, various tables, graphs, footnotes, page references, and chapter summaries, with an adequate table of contents, but a rather brief index.

After the scope of the problem and its limitations there follows a fine discussion of applying educational principles to learning in industry, and a comprehensive review of economic methods of work for the individual and the group.

Fatigue is considered both from its psychical and its environmental relations—the latter rather too briefly, with no consideration of physiological origins and differences in such matters as nutrition, elimination, circulation, and bad personal hygiene, or the recognition of the importance of disease states and especially "silent sickness," as chronic degenerative afflictions are aptly called by Fisk. As some of these personal states are almost constantly bobbing up, and at least indirectly influencing the mental state, one feels they can hardly be overlooked for any group of workers, no matter how scientifically they may have been selected upon employment. Due attention is given to the reports of

the British Industrial Fatigue Research Board but the author overlooks Bedford's "Ideal Work Curve" as one of the possible methods of gauging fatigue in industry.

There is an excellent discussion on "Satisfaction and Morale" and a psychologist's view of the subject of accidents. A chapter on "Efficiency in Executive Work" rightly warns of "gold brick" psychology, "mental dynamisms" and similar quackery, and in an entertaining manner presents the subjects of attention, memory, and habit formation. It is claimed that industrial psychology is playing a larger rôle in Europe than in America, but we doubt if with as great success in view of the preponderance of industrial disputes abroad as contrasted with the present-day "get-together" policy of employer and employee in this country.

Coöperation of other experts with the psychologist, notably engineers, is cited. Truly the efficient management of the "human machine" requires the services of several types of experts, and at present there is not enough coöperation between them, each feeling that his own field about covers the subject.

This book is by an able and experienced psychologist already favorably known for his work on *Principles of Employment Psychology*. It considers a most important side of personnel management, with the aim of suggesting better methods of work and better results with the same effort.

EMERY R. HAYHURST

Milk and Milk Products—*By C. H. Eckles, D.Sc., W. B. Combs, and Harold Macy, Ph.D. New York: McGraw-Hill*, 1929. 379 pp. Price, $3.50.

The latest of several recent contributions to the literature on dairy science is a more or less elementary textbook for agricultural students. It covers the field in a thorough and comprehensive manner, discussing the composition and properties of milk, the various micro-organisms which influence it, the common dairy processes, the manufacture and use of dairy products, and their place as food. A chapter on market milk has a sound, but rather sketchy outline of sanitary methods. One striking characteristic of the book is that it has no bibliography and practically no references. The book is well printed, competently illustrated, and has a good index. It should prove of value to those who have to deal in an official or commercial capacity with milk and its many important products.

JAMES A. TOBEY

The Art of Rapid Reading—*By Walter B. Pitkin. New York: Mcgraw-Hill*, 1929. 233 pp. Price, $2.50.

Mr. Pitkin offers a life-preserver to the man who is slowly sinking in the accumulation of books and periodicals that he knows he should read for his own best interests, but for which he cannot find time in his busy life. The public health worker should at least examine the proffered assistance.

The author argues that writing is improving and the output of printed matter is larger and increasingly better, but that our reading has not speeded up and improved in proportion. In the first part of his book, Mr. Pitkin diagnoses various reading troubles. In the second and third parts he suggests ways to improve "word habits" and "eye grasp." The fourth section is devoted to the art of "skimming," and suggests a technic for grasping salient points. The fifth section deals with practice exercises. He includes a progress chart upon which to record one's improvement, and a brief but adequate index.

The book is for study and would probably profit the conscientious stu-

dent. The eye tests are interesting and those made by this reviewer show an astonishing variation among individuals in the number of words taken in at a glance. The least valuable feature of the book is that it makes excellent dinner-table conversation.

Mr. Pitkin's examples of light, average, solid and heavy reading are not always apt. They would be more valuable if they were of more general interest. It is to be remembered, however, that the book is written for the busy business man who wishes to increase his capacity for informing himself. It does not relate to reading for pleasure or what Mr. Pitkin calls "revery reading." One puts aside the book with the reflection that we have had "The Art of Thinking," "The Art of Reading," and now we have "The Art of Rapid Reading." Will someone come to the rescue with "The Art of Remembering"?

W. M. RAYNE

Bergey's Manual of Determinative Bacteriology: *A Key for the Identification of Organisms of the Class Schizomycetes—By David H. Bergey. (3d ed.) Baltimore: Williams & Wilkins,* 1930. Price, $6.00.

The general plan of the Manual is the same, except that it has been enlarged by the addition of new tribes and genera, and over 200 new organisms most of which fall into the genera of flavo-bacterium, pseudomonas, phytomonas, lactobacillus, and bacillus, so that the keys for these genera have been re-fitted. The former dysentery group has been separated from typhoid under the euphonious name of "Shigella." Why our old friend *B. lactis aerogenes* should be separated from its associates *B. pneumoniae* and *B. rhinoscleromatosis, et al.*, and made the head of a separate genus is still beyond me. the only apparent distinction being that one occurs usually in the digestive tract and the other in the respiratory. The recent attack of psittacosis might lead us to believe that such separations are doubtful, and depend mainly on the animal involved.

On the whole, however, there seems to be a greater degree of conformity to the original recommendations of the S. A. B. It still seems unfortunate that this book is accepted abroad as the final word on American opinion. Perhaps each succeeding edition may show improvement. ROGER G. PERKINS

The Visiting Teacher at Work—*By Jane F. Culbert. New York: Commonwealth Fund Division of Publications,* 1929. 235 pp. Price, $1.50.

"The aim of this book is to present in sensible and practical form a discussion of the professional standards, procedure, and administrative relationships of the visiting teacher." The lapse of more than twenty years since visiting teacher service was introduced into the public schools has made possible an authoritative study and treatment of these phases of health and education.

The book is divided into two parts: Work with the Child, and Professional Standards and Relationships. There is a group of appendixes covering types of records and forms, and also a bibliography.

The visiting teacher must ask of the school, "How can the school process best fit the needs of this child?"—of the home, "What in the family or home environment is preventing this child from realizing his potential power, and experiencing his best service in his civic relations?"—of the community, "What lack or obstacles for which the community is responsible are preventing this child from receiving his just share of opportunity for physical, mental, and spiritual growth?"

The problems with which she must most frequently deal are those of "poor

or failing scholarship, behavior, unfavorable physical and environment conditions, unsatisfactory relations with companions or with those in authority, hampering, unwholesome and personality traits."

The table of types of problems indicates that poor scholarship stands at the top of the list, being 37 per cent more common than any other cause. As poor scholarship frequently results from poor physical condition, or absence due to illness, it would seem that health problems enter more largely into the situation than the tabulation (410 cases of special health problems out of a total of 11,588 cases) would indicate. This seems proved by a later table, showing the "factors in the children themselves considered by the visiting teacher in making a diagnosis and plan of treatment," which places physical disabilities at the top of the list.

As to the attitudes and conditions existing in the school as potent factors in affecting adjustment, that of an unsympathetic teacher is the one most commonly found. The most effective measure in assisting the school to adjust the children was found to be "bringing about better understanding of home conditions."

To be successful, the visiting teacher should know first the child and its family; second, the community; third, the schools. She must demonstrate that she is neither a "fad" nor a "fancy." She must establish friendly and cooperative relations with school principals, teachers, nurses, and with other specialists who come in contact with pupils. The most important relation, outside of that with the child itself, is that with the classroom teacher.

Miss Culbert, being Secretary of the National Committee of Visiting Teachers, and thoroughly familiar with their activities throughout the country, is in a peculiarly advantageous position to compile a book of this sort. Its content should be part of the information of all teachers, principals, and other school administrators, of school physicians and school nurses, of social workers, mental hygienists, and other specialists in child problems.

Somewhat closer punctuation would make the text easier reading.

CHARLES H. KEENE

Our Baby's First Seven Years—*By Hermien D. Nusbaum. Chicago: Reilly and Lee,* 1928. 85 pp. Price, Keratol Cloth, $2.50, Silk Moire, $4.00.

This book is planned for a combined physical and sentimental record of a child's first seven years. It is a very attractive and complete "Baby Book" the filling of which will be a joy to intelligent parents and a real value to the child.

A foreword by Dr. J. B. DeLee stresses the importance of a careful, full "record of physical changes, of growth, of sickness, and other conditions to which the physician could refer for discovery of constitutional tendencies or of acquired susceptibilities." Ample space is provided for records of this nature, a partial list of which follows:

Doctor's observations of facts of birth
Accurate measurements
Identification marks, including foot and finger prints
Records of weight, height and growth
Complete form for medical examination
Feeding records
Muscular and mental development
Teeth tables
Personal habits
Illness and injuries
Preventive measures against diseases

A blank form for a three-generation pedigree is provided. A page for "Outstanding talents and characteristics of antecedents" will probably remain blank in peace-loving families.

A carefully selected list of pamphlets, magazines, and books dealing with the physical and mental health of children

and parental responsibilities is given which should be of real assistance to the conscientious father and mother.

The only suggestion that might be made for the completion of the health pages of the book is the inclusion of scarlet fever and measles in the list of diseases against which preventive measures are taken.

The binding, illustrations in colors, and the general make-up of the book are very attractive indeed and no nicer present could be given to the household that is boasting a new baby.

JOHN HALL

Burdett's Hospitals and Charities, 1930. *Being the Year Book of Philanthropy and the Hospital Annual—Founded by Sir Henry Burdett, K.C.B., K.C.V.O. London: Nursing Mirror, Ltd., 24 Russell Square, W.C. 1,* 1930.

The 1930 edition of this valuable guide for the 40th year of its existence is at hand. The entire volume concerns Great Britain and Ireland. The chapter "The Voluntary Hospitals" gives a review which is of interest to all concerned in such institutions. Among the features are the facts that more than half the hospitals which made returns showed deficits amounting in all to considerably more than 5 million dollars; that the number of available beds increased by 3,095, 81 per cent of which were occupied daily; that motor accident cases have cost voluntary hospitals approximately a million dollars during the year, and are on the increase, becoming constantly a greater burden, so that compulsory insurance has been suggested. The cost of radium has become a matter of concern to all hospitals.

During the year an International Hospital Conference was held in Atlantic City, N. J., at the invitation of the American Hospital Association, at which new ground was broken.

With the exception of these features, the book is made up of a systematic directory of institutions and philanthropic bodies, medical schools and colleges, nursing and convalescent institutions, institutions for the blind, sanatoriums, etc. An admirable index makes its material available. As a book of reference, it is extremely valuable, and the information it contains may come in handily for the many thousands of Americans who will visit England and Ireland during the year and are liable to fall ill while abroad.

M. P. RAVENEL

The Rat. A World Menace—*By A. Moore Hogarth, F.E.S. With Preface by Sir Thomas Horder, Bart. London: John Bale, Sons and Danielsson, Ltd.,* 1929. 112 pp. Price, $2.50.

This little book is timely, as we have recently been told that the rat population of the United States is more than 125 million, and that each person in this country pays $2.00 per annum for the upkeep of one rat.

The rat is an economic scourge; from the public health standpoint, it is a menace. The preface by Sir Thomas Horder expresses surprise that so little has been done toward the extermination of carriers of disease. In England, there is now the College of Pestology, the object of which is to teach the danger of carriers and the methods of dealing with them.

The present volume gives the history, geographic distribution, species, habits, etc., of rats; tells of their fecundity; the amount of food consumed and danger caused; describes methods of getting rid of them, and preventing their increase.

The book is small and light, and can be heartily commended for general as well as professional reading. Certainly increased activity in the destruction of rats is needed throughout the world.

M. P. RAVENEL

A System of Bacteriology in Relation to Medicine, *Vol. IV—By H. J. Bensted, W. Bulloch, L. Dudgeon, A. D. Gardner, E. D. W. Greig, D. Harvey, W. F. Harvey, T. J. Mackie, R. A. O'Brien, H. M. Perry, H. Schutze, P. Bruce White, and W. J. Wilson. London: His Majesty's Stationery Office,* 1929. 482 pp. Price, $6.00.

The second volume of *A System of Bacteriology in Relation to Medicine,* published by the Medical Research Council, is No. IV, devoted largely to the organisms usually described as the colon-typhoid group. Needless to say, these are among the most interesting and important organisms met with. This alone would make the volume of outstanding importance. They are divided into *Bacillus Typhosus,* 66 pages; Salmonella Group, 65; Dysentery Group, 94; Colon Group and Similar Bacteria, 81. Approximately 110 pages are given to The Cholera Vibrio and Related Organisms, and 27 to the Pasteurella, to which the name of Trevisan, who proposed the name in honor of Pasteur, is attached. A final short chapter is given to *Pseudotuberculosis Rodentium.*

The general plan is to consider each group as a whole, after which the individual organisms are taken up in detail. The histories written by W. Bulloch are deserving of especial mention. It is safe to say that nowhere can one find the essential facts more clearly and concisely put. Under typhoid fever, he calls attention to a fact very little known —that Bretonneau, the author of the classic description of diphtheria, was the first to maintain that typhoid fever was contagious, that it was accompanied by a specific intestinal " eruption," and that one attack conferred protection. This was written in 1829, and resurrected in 1922 by Dubreuil-Chambardel.

Some of the classifications are rather surprising. The fluorescens-pyocyaneus group is included in the chapter on the colon, and we are even given some points of differentiation between the pyocyaneus and the colon.

The book as a whole calls forth nothing but praise. Every subject is discussed as fully as is necessary, and the reader is left with a clear conception of the matter under discussion. In every respect it is up-to-date. Each chapter ends with a well selected bibliography. There is a welcome absence of the endless discussions too often found, which end nowhere.

Everyone who has seen the two volumes so far issued will look forward with eagerness to the rest of the series. The printing is excellent, the paper light with mat surface. If the other volumes keep up to the high standard of those issued, as we have no doubt they will, it can be stated with assurance that there will be no publication in the world containing a more authoritative exposition of our knowledge of the science of bacteriology. M. P. RAVENEL

The Village Doctor—*By Sheila Kaye-Smith. New York: Dutton,* 1929. 266 pp. Price, $2.50.

This charmingly written story conveys a convincing health lesson. A well educated, up-to-date physician whose health requires him to leave London acquires a practice in an old rural district. His ideas about pure drinking water are combated with the old, old argument about fathers and grandfathers having used the supply without harm. Finally a severe epidemic of typhoid fever predicted by the new doctor convinces the authorities that they are wrong in using the same stream both as a sewer and as a source of water. However, his chief convert, who is also a political power in the community, is made by the doctor's kindly advice concerning a highly valued sick cow!

The book has had 17 printings in 2 months, which proves that it is charmingly written, and has the human interest quality. M. P. RAVENEL

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH. D.

Meningitis Control—The Massachusetts State Health Department offers a meningitis diagnostic service to the physicians of the state similar to the services it performs for cases of poliomyelitis. Local boards are urged to isolate cases for 2 weeks and until symptoms clear up; contacts are isolated for 10 days.

ANDERSON, G. W., and BIGELOW, G. H. Epidemic Meningitis Control. New Eng. J. Med., 202, 11: 518 (Mar. 13), 1930.

Standard Methods of Water Analysis—This is a report of the Committee of Standard Methods for the year 1928–1929. Much valuable research is reported upon and 25 recommendations are recorded.

ANON. Report of Committee No. 1 on Standard Methods of Water Analysis. J. Am. Water Works A., 22, 2: 242 (Feb.), 1930.

Self-Disinfection by the Skin—The power of the skin to destroy bacteria was tested. The results of the tests are not entirely clear to this superficial reviewer.

ARNOLD, L., *et al.* The Self-Disinfecting Power of the Skin. Am. J. Hyg., 9, 2: 345 (Mar.), 1930.

Responsibility for Cancer Control—The responsibility of the health official, the research worker, the dentist, practicing physician, nurse and social worker, the educator, journalist, etc., in the world-wide cancer control project is allotted to each group.

BLOODGOOD, J. C. Cancer as a World Problem. New York State J. Med., 30, 5: 255 (Mar. 1), 1930.

Milk Sanitation Essentials—The diseases to be guarded against are diarrhea, tuberculosis, other communicable diseases (including undulant fever). The answer is, of course, pasteurization; the job, stimulating public demand for pasteurized milk.

BROOKS, P. B. Essentials vs. Non-Essentials in Milk Sanitation. New Eng. J. Med., 202, 12: 582 (Mar. 20), 1930.

British Maternity Service—This discussion of the objectives and methods to be employed in providing a national maternity service will be read with interest by American health workers.

CASSIE, E. A National Maternity Service. J. Roy. San. Inst., 50, 9: 581 (Mar.), 1930.

Influenza Epidemics—This is a detailed study of the origin and progress of 6 epidemics of influenza which occurred from 1920 to 1929. A quarter of a million deaths were recorded, one-half as many as in the pandemic of 1918–1919. An important contribution.

COLLINS, S. D. Influenza-Pneumonia Mortality in a Group of about 95 Cities in the United States, 1920–1929. Pub. Health Rep., 45, 8: 361 (Feb. 21), 1930.

Nuclear Response in Yellow Fever—Reporting studies leading to the conclusion that the nuclear response in yellow fever is of the same general type which occurs in chicken pox, herpes, and other virus diseases.

COWDRY, E. V., and KITCHEN, S. F. Intranuclear Inclusions in Yellow Fever. Am. J. Hyg., 11, 2: (Mar.), 1930.

Colds—An inclusive review of laboratory and field research in regard to the cause and prevention of colds leading to these conclusions: colds are "seasonable"; no microörganism has been demonstrated; no prophylactic

method is of unquestioned value. Suggestions for further research are appended.

DOULL, J. A. Acute Endemic Upper Respiratory Disease. Canad. Pub. Health J., 21, 3: 105 (Mar.), 1930.

Visiting Nurse and Hospital Service—An interesting story, well told, of the development and organization of a county nursing service, from and by the Englewood (N. J.) hospital. The combination of administration works to the mutual benefit of each.

EDGECOMB, M. E. Public Health Nursing under the Englewood Plan. Pub. Health Nurse, 22, 3: 126 (Mar.), 1930.

New Haven Tuberculosis Program—The organization for the control of tuberculosis in New Haven has unique features. The generalized nursing plan and the advantages of the polyclinic are discussed.

EDWARDS, H. R. The Tuberculosis Program in New Haven. Am. Rev. Tuberc., 21, 2: 233 (Feb.), 1930.

Tuberculosis Research — Telling about the fundamental chemical studies upon the tubercle bacillus and the physiological effects of the chemical fractions. The promising work will be continued in a number of widely separated laboratories.

EMERSON, K. Research in Tuberculosis. J. A. M. A., 94, 11: 759 (Mar. 15), 1930.

Venereal Diseases in Toronto—A survey is reported of venereal disease cases under medical care in the city of Toronto. The rate 8.4 per 1,000 is lower than the corresponding rates reported from 14 cities in the United States.

FENWICK, C. P. Venereal Disease Survey of Toronto. Canad. Pub. Health J., 21, 3: 132 (Mar.), 1930.

Yellow Fever Virus—This reports the inability to demonstrate the presence of any particular organisms in the blood of monkeys infected with yellow fever. Other important findings are recorded.

FROBISHER, M. Properties of Yellow Fever Virus. Am. J. Hyg., 11, 2: 300 (Mar.), 1930.

Cancer Bacteria?—Reporting the elaborate life cycle of an exceedingly pleomorphic microörganism which the author succeeds in recovering from various types of malignant lesions.

GLOVER, T. J. The Bacteriology of Cancer. Canada Lancet, 74, 3: 92 (Mar.), 1930.

Underpar School Children—Twenty-eight tuberculosis suspects were given cod liver oil; they gained an average of 6.7 lb. compared to 3.25 lb., the average of normal school children of the same age. At the same time there was experienced a decrease in abnormal temperatures and an improvement in school attendance and scholarship.

HOLMES, A. D., and ACKERMAN, H. L. The Value of Cod Liver Oil for Underpar Children of School Age. New Eng. J. Med., 202, 10: 470 (Mar. 6), 1930.

European Milk Borne Epidemics—Epidemiologic studies of milk borne communicable disease outbreaks are reported. They make a valuable addition to America's "exhibit A." Professor Madsen's answer is the same as ours: efficient pasteurization.

MADSEN, T. J. M. Milk Epidemics. Pub. Health, 43, 6: 168 (Mar.), 1930.

Water Supply Contamination—Ingenious devices thought out by consumers for the contamination of water systems form an interesting commentary on human frailties.

MORRIS, S. B. Contamination of Water Systems by Consumers' Water Uses. J. Am. Water Works A., 22, 2: 180 (Mar.), 1930.

British Experience with Alcoholism—The causes of the "remarkable decline in mortality of diseases associated with excessive consumption of al-

cohol" are: changes in personal hygienic habits; enormous extension of counter-attractions to the public house; curtailment of hours of sale. Educational campaigns for temperance are suggested for the use of local authorities. Whether the British method is inferior to our constitutional short-cut is a field for absorbing, but largely profitless, speculation.

NEWMAN, G. Alcohol and the Public Health. Med. Off., 43, 8: 83 (Feb. 22), 1930.

Scarlet Fever Prophylaxis—Contacts given human immune serum developed scarlet fever to the extent of 2.9 per cent; 12.8 per cent of the unprotected contacts developed the disease. Immunity lasts not longer than 3 or 4 weeks. Prophylactic treatment is recommended for very young and infirm contacts.

MEADER, F. M. Scarlet Fever Prophylaxis. J. A. M. A., 94, 9: 622 (Mar. 1), 1930.

Heredity vs. Environment—Sir Thomas's presidential address at the Institute of Hygiene (British) explores again this ancient and familiar controversy, concluding hopefully, "In some unknown manner a close association is established between structure and function so that while heredity perpetuates, fresh powers from environmental sources are added whereby heredity becomes enriched with the passing of the generations and the further evolution of the race is secured."

OLIVER, T. Heredity, Environment, Opportunity. Med. Off., 43, 9: 97 (Mar.), 1930.

Etiology of Poliomyelitis—Further reports on the study of the pleomorphic diplococcus of poliomyelitis and the results of treatment of cases with antiserum. This controversy bids fair to equal that raging about BCG.

ROSENOW, E. C. Poliomyelitis Antistreptococcus Serum. J. A. M. A., 94, 11: 777 (Mar. 15), 1930.

Vitamins in Malted Milk—Malted milk was found to be rich in vitamins A, B (B_1) and G (B_2) when assayed biologically.

QUINN, E. J., and BRABEC, L. B. The Vitamin A, B, and G Content of Malted Milk. J. Home Econ., 22, 2: 123 (Feb.), 1930.

Tuberculosis Decline—Is tuberculization, improved physical status, or better public health facilities the cause of the decline in tuberculosis case and death rates? It would not be fair to the author to give away his answer here. The paper is easily available; read it and the ensuing discussion.

SHEPARD, W. P. A Review of Factors Involved in the Decline of Tuberculosis. J. A. M. A., 94, 10: 697 (Mar. 8), 1930.

Child Guidance—Looking back over the years of experience in child guidance, the author concludes that the clinics have helped parents, social workers, nurses, pediatricians, psychiatrists, and persons dealing with juvenile delinquency, as well as the children actually studied.

SMITH, S. K. Child Guidance Clinics. J. A. M. A., 94, 10: 710 (Mar. 8), 1930.

Dysentery Outbreak in Prison—An outbreak of dysentery (Flexner type) in a prison provided an unusual opportunity for the study of the disease. The results of administering bacteriophage were inconclusive.

STANLEY, L. L. Prison Epidemic of Flexner's Dysentery. J. A. M. A., 94, 12: 857 (Mar. 22), 1930.

Weighing and Measuring—Shall we weigh and measure school children, in view of the American Child Health Association's findings? Weigh?—Yes, with certain limited objectives. Use height-weight tables to determine nutritional status?—No.

WHITNEY, A. The Weighing and Measuring of School Children. Child Health Bull., 6, 2: 39 (Mar.), 1930.

HEALTH DEPARTMENT AND OTHER REPORTS

IRA V. HISCOCK

Connecticut—Connecticut's "Banner Health Year" was 1927. As shown by the 43d report of the 51st year of the State Department of Health for the year ending June 30, 1928, the 1927 general death rate of 10.6 per 1,000 is a record low, as was the infant mortality rate of 58.4 per 1,000 births and the specific death rates for typhoid fever (1.1 per 100,000), scarlet fever (1.4), whooping cough (2.5), tuberculosis, all forms (66.8), pulmonary tuberculosis (57.6), and diarrhea under 2 (11.5). The prevalence of communicable diseases in the state was at a minimum. The total of 24,428 cases of reportable diseases was the smallest since 1917.

The task of surveying the state for hospitals required to be licensed by the department, by the law passed in 1927, was carried out by the Bureau of Preventable Diseases. There were 45 hospitals licensed for the year, of which number 29 were for chronic and convalescent cases only. This bureau also introduced the plan of sending out forecasts of threatened epidemics of diphtheria, smallpox, and poliomyelitis to the health officers and physicians of the state.

The allocation of births and deaths was begun by the Bureau of Vital Statistics, to be effective for the year 1927 and thereafter. A form notice is sent to the registrar to whose jurisdiction the death is being charged, no actual transference of records taking place, though copies of birth and death records of non-residents are sent to the registrars of the cities where the parties concerned are residents. The allocation of births is done according to the residence of the mother.

The major activities of covering 110 water supplies furnishing water to 136 communities, carrying on the supervision of 16 filter plants and 44 chlorination plants, the covering of 33 sewerage systems having some form of treatment before final disposal, the checking and supervision of swimming pool operations, and the shellfish program, constitute the major activities of the Bureau of Sanitary Engineering. In addition, the inspection and control of a rapidly increasing number of wayside eating places and summer boarding camps is a state necessity covered by this bureau.

The routine work in child hygiene has increased; from 50 to 55 well child conferences were operated with the assistance of local physicians and officials during the year. A total of 7,819 children attended, in which 726 physical defects were found. The Summer Round-up of children about to enter school for the first time, which was started two years before, was held in 1927 in 32 towns and covered over 1,000 children. The May Day Program initiated by the American Child Health Association has been designated by the governor as Child Health Day.

The volume covers 411 pages, containing tables and charts illustrating every phase of state health activity. Numerous photographs are interspersed throughout the text, which is improved for use by an excellent table of contents and an index.

Palo Alto, Calif.—This annual report for the calendar year 1929 came off the press February 21—an excellent record! The report opens with a clear organization chart of the health department, followed by 7 photographs skillfully arranged on a single page to acquaint the reader at a glance with the scope of activities.

On the basis of 13,200 population, a

resident death rate of 9.9 per 1,000 is recorded. There were 10 infant deaths, giving an infant mortality rate of 62.1, but for the 10-year period 1920–1929, an infant mortality rate of 41.3 is noted. During the year bonds were voted for a new hospital to cost $450,000 which will provide isolation and laboratory facilities for the health department in addition to general hospital provisions. A new milk ordinance provides that all milk must come from tuberculin tested cows, and that all milk except certified and guaranteed raw milk must be pasteurized.

During 1929 there were 11 cases of diphtheria, but there have been no deaths from this disease in Palo Alto since 1921, and but 1 death since 1911. Toxin-antitoxin was furnished to immunize 310 persons, and 6 diphtheria carriers were discovered and isolated. At the end of 1928, 10 cases of tuberculosis were known to exist in the city and 12 new cases were reported during the year 1929 with 8 deaths. Expenditures in 1929 by all agencies for public health work totalled $17,422, of which $12,892 was expended through the health department, the remainder being provided by school boards, the Parent-Teacher Association, and tuberculosis seal sales. The allotment to health work in the Palo Alto city budget was 3.2 per cent of the total for all activities.

Racine, Wis.—Wisconsin's second city rates in the honor list of health officers' annual reports for 1929. This 64-page mimeographed report abounds in valuable statistical charts and tables and in enlightening descriptive text. The cost of 125 copies, exclusive of the time required in preparation by the regular staff, was $73.11. There are a 1-page table of contents at the front and a 3-page alphabetical index at the back, which facilitate reference to special subjects.

A classified financial statement compares expenditures of 1929 with those of three earlier years and with appropriations for 1930. For purposes of comparison of the data of the current year with previous experience, figures are presented in tables for the first and last years of the health officer's incumbency, plus the median for the 5-year period. The *Appraisal Form* of the American Public Health Association has been effectively used in the evaluation of practices and services.

Plans have been completed for a new city hall in which the health department will be conveniently housed according to plans drawn by the health officer and accepted by the administration. The milk ordinance in the city was amended during 1929 to provide for compulsory pasteurization of all milk except certified.

A centralized family file has been established in which are recorded all data pertaining to a given family, such as birth, death, marriage, contagious disease, school physical examination, clinic attendance and any other contact which might be had with the health department. The estimated number of families in Racine is 15,000, and the new family file contains nearly 9,000 family records as a result of the first year of its service. Such a broad basis of contact with the people indicates that the health department is directly serving a large percentage of the citizens.

The most important new project of the year was the launching of a campaign for the examination of preschool children within 4 months before entering school. This campaign was headed by the American Legion through a committee of which the health officer was chairman. In addition to the Legion and auxiliary, the participants in this project were the American Red Cross, the County Medical Society, the public schools, the Catholic parishes, and pa-

rochial schools and the Junior League. The Medical Society sponsored 19 special clinics served by physicians appointed by the president, assisted by health department nurses. The health officer personally examined children at the city hall and the Red Cross opened its baby clinics to assist in the work. Over one-third of the 900 children invited for examination responded, 332 were examined thoroughly, and 52 qualified for Blue Ribbons presented by the Legion at a party at which the Legion auxiliary members were hostesses. All records were made available to the school which each child entered in September. One result of this project was an improvement in the *Appraisal* score for preschool hygiene from 34 points in 1928 to 60 points in 1929.

Ottawa, Canada—One of the most important factors in the 1929 report is the account of the epidemic of poliomyelitis which began in July and lasted until October. There were 176 cases with only 4 instances where 2 cases were reported from the same premises. The weather was dry, the rainfall being below the average. The treatment with convalescent serum was found to be effective.

The report shows the population for 1929 to be 125,496, with a general death rate of 12.26, which is higher than last year, and a birth rate of 23.84, which is the lowest rate yet recorded. The increase from 104.01 as in 1928 to 118.6 in infant mortality rate accounts for 20 per cent of all deaths. The chief cause of infant deaths was respiratory disease.

There was a reduction in the tuberculosis rate to 59.9 per 100,000, 78 per cent of the deaths being from pulmonary tuberculosis. The cancer rate increased, causing 8.83 per cent of all deaths. An excess of measles was due to an epidemic in February with 786 cases. The total incidence of measles was 1,907 cases for the entire year.

Vienna, Austria—An interesting report has been submitted of the dental work that is being done in the schools of Vienna by the 15 dental clinics for public school children, and 3 for institutional children serving 16 districts. This program was begun in 1922.

Each clinic has an operating room, a waiting room for children and one for the escorts of the children. It was found that the children were less nervous if they were kept together where they could play and amuse themselves before the examination.

There are 37 dentists and assistants giving services, each dentist making about 20 examinations a day. The entire program is under the supervision of a chief surgeon, who reports monthly to the municipal Board of Health and a head nurse who is in charge of all supplies. The maintenance cost for 1929 was $63,234.00 and the budget required for 1930 will be $72,171.00.

The children are given an examination and treatment twice a year up to the 14th year of age, and then advised on their dental care up to 18. Before a child can be examined he must have the consent of his parents; if their consent is withheld he is excluded from the clinic. Before beginning an operation each child must brush his teeth under the supervision and instruction of the nurse. The sum total of children being cared for by the school dental clinics was 55,415 with probably 64,000 in 1930.

Sacramento, Calif.—The report for 1929 shows a marked increase in epidemic meningitis, 80 cases with 38 deaths against 15 cases with 8 deaths for 1928. There was also an increase in pneumonia and heart disease but a

slight decrease in cancer and in infant mortality, from 67.5 to 63.8. The birth rate was practically the same as last year. The city clinics rendered 12,633 services including 4,000 treatments for syphilis and an immunization service of 2,697. The attendance at the health center showed a slight decrease over last year due perhaps to the establishment of the Sacramento Hospital Well-Baby Clinic, for babies born in the hospital.

BOOKS RECEIVED

SEWERAGE AND SEWAGE DISPOSAL. A Textbook. (2d ed. rev.) By Leonard Metcalf and Harrison P. Eddy. New York: McGraw-Hill, 1930. 783 pp. Price, $6.00.

THE MONEY VALUE OF A MAN. By Louis I. Dublin and Alfred J. Lotka. New York: Ronald Press, 1930. 264 pp. Price, $5.00.

YOURSELF, INC. THE STORY OF THE HUMAN BODY. By Adolph Elwyn. New York: Brentano's, 1930. 320 pp. Price, $3.50.

WHAT IS EUGENICS? By Leonard Darwin. New York: Galton Pub. Co., 1929. 88 pp. Price, $1.00.

POSTERITY. By Frank W. White. New York: Galton Pub. Co., 1930. 139 pp. Price, $1.50.

PERSONAL HYGIENE FOR NURSES. By Seneca Egbert. Philadelphia: Davis, 1930. 347 pp. Price, $2.50.

SYMPOSIUM ON PHYSICAL EDUCATION AND HEALTH. Compiled and edited by Jay B. Nash. New York: N. Y. University Press, 1930. 320 pp. Price, $2.00.

THROUGH THE STATES WITH A SEEING EYE. By Richard J. A. Berry. Bristol: John Wright & Sons, 1930. 200 pp. Price, $1.75.

REPORT ON MUSSEL PURIFICATION. By R. W. Dodgson. London: H. M. Stationery Office, 1928. 498 pp. Price, $7.00.

PUBLIC HEALTH ASPECTS OF DENTAL DECAY IN CHILDREN. By Raymond Franzen. New York: American Child Health Association, 1930. 121 pp. Price, $1.25.

THE ALIEN IN OUR MIDST. Edited by Madison Grant and Charles Stewart Davison. New York: Galton Pub. Co., 1930. 238 pp. Price, $3.00.

THE FILENE STORE. A STUDY OF EMPLOYES' RELATION TO MANAGEMENT IN A RETAIL STORE. By Mary LaDame. New York: Russell Sage, 1930. 541 pp. Price, $2.50.

NATIONAL CONFERENCE OF SOCIAL WORK. SAN FRANCISCO, 1929. Chicago: University of Chicago Press, 1930. 682 pp.

THE EPIDEMIOLOGY AND CONTROL OF MALARIA IN PALESTINE. By Israel J. Kligler. Chicago: University of Chicago Press, 1930. 240 pp. Price, $5.00.

BIO-DYNAMICS: THE BATTLE FOR YOUTH. By Boris Sokoloff. New York: Covici, Friede, 1930. 230 pp. Price, $3.00.

THE STORY OF SAN MICHELE. By Axel Munthe. New York: Dutton, 1929. 530 pp. Price, $3.75.

NERVE TROUBLES, CAUSES AND CURES. By Cecil Webb-Johnson. New York: Stokes, 1930. Price, $1.00.

BEFORE THE BABY COMES. A Practical, Non-Technical Manual for Prospective Mothers. (rev. ed.) New York: Harper, 1929. 170 pp. Price, $2.00.

REMINISCENCES OF GEORGE MARTIN KOBER, M.D., LL.D. Vol. 1. Published under the Auspices of The Kober Foundation of Georgetown University. Washington, D. C.: Kober-Foundation, 1930. 403 pp.

IMMUNITY IN INFECTIOUS DISEASES. A Series of Studies. By A. Besredka. Baltimore: Williams & Wilkins, 1930. 364 pp. Price, $5.00.

CONSTRUCTIVE HYGIENE. (4th ed.) By Thomas A. Storey. Stanford University: Stanford University Press, 1930. 236 pp. Price, $2.50.

SLEEP. WHY WE NEED IT AND HOW TO GET IT. By Donald A. Laird and Charles G. Muller. New York: John Day, 1930. 214 pp. Price, $2.50.

BREAD. A Collection of Popular Papers on Wheat, Flour and Bread. By Harry Snyder. New York: Macmillan, 1930. 293 pp. Price, $2.50.

YOUTH AND CRIME. A Study of the Prevalence and Treatment of Delinquency among Boys over Juvenile-Court Age in Chicago. By Dorothy Williams Burke. Washington: Government Printing Office, 1930. 205 pp. Price, $.35.

COMMON COLDS: Causes and Preventive Measures. By Leonard Hill and Mark Clement. London: Heinemann, 1929. 126 pp. Price, $3.00.

HARVEY W. WILEY. An Autobiography. Indianapolis: Bobbs-Merrill, 1930. 339 pp. Price, $5.00.

NEWS FROM THE FIELD

SUMMER SCHOOL COURSES IN PUBLIC HEALTH

THE following universities and technical schools are offering courses in public health and preventive medicine during their summer sessions. While this is not a complete list of schools giving such courses, it represents those replying to a questionnaire sent out by the American Public Health Association.

University of California, Berkeley, Calif.

June 30–August 9

Child Welfare
Health of the School Child
Public Health Nursing
Elementary Epidemiology
Elementary Public Health

University of Chicago, Chicago, Ill.

June 16–July 23 (First Term)
July 24–August 29 (Second Term)

Public Hygiene
Immunity in Relation to Preventive Medicine (First Term)
Sanitary Surveys
Field of Public Health Nursing
Supervision of Public Health Nursing
School Hygiene
Physical Education
General Bacteriology
The Pathogenic Bacteria
Parasitology
Health Education
Personal Hygiene
Physiology of Nutrition
Statistics
Filterable Viruses
Medical Entomology (Second Term)
Advanced Bacteriology, Parasitology, Immunology and Public Health
Theoretical Bacteriology and Parasitology

Columbia University—DeLamar Institute of Public Health, College of Physicians and Surgeons, New York, N. Y.

June 16–July 2

School Health Supervision

Teachers College, New York, N. Y.

Home and Community Hygiene
Child Hygiene
Public Health Administration
Mental Hygiene
Administration of Health Work in Schools
Teaching Problems in Health Education
Methods of Health Education
Public Health Nursing
Methods of Teaching in Sight Conservation Classes
Methods of Teaching Lip-reading to Deafened Children
Methods of Teaching in Fresh Air Classes
Health Education in Continuation Schools
Safety Education
Social Hygiene

Cornell University, Ithaca, N. Y.

July 5–August 15

Physical Education
Measurements of School Children
Hygiene of the School Child and Adolescent
Health Inspection of School Children
Gymnastics and Dancing

Duke University, Durham, N. C.

June 10–July 19

Research in the Organization and Administration of Health Education
School Hygiene and Health Education
Physical Education in the Elementary School
Personal and School Hygiene

University of Georgia, Athens, Ga.
June 23–August 22
Educational Hygiene
Mental and Educational Measurements
Bacteriology
Sociology

Harvard University, Cambridge, Mass.
July 7–August 6
Principles and Problems of Hygiene
Physical Education

University of Illinois, Urbana, Ill.
June 16–August 9
Organization and Supervision of Health Education in the Elementary Schools
Physical Education
School Hygiene
Health Education and Corrective Gymnastics

State University of Iowa, Iowa City, Ia.
June 9–July 18 (First Term)
July 21–August 21 (Second Term)
Hygiene
Advanced Hygiene
Hygiene of Swimming Pools, Gymnasiums, Camps
Principles of Physical Growth and Measurements
Supervision of Public School Physical Education
Administration of Physical Education and Athletics
Medical Supervision of Athletics
Corrective and Remedial Gymnastics
The Health Education Program in Elementary Schools
Seminar in Public Health

Johns Hopkins University, Baltimore, Md.
June 30–August 8
The Elements of Hygiene and Preventive Medicine
School Hygiene and Vital Statistics

Massachusetts Institute of Technology, Cambridge, Mass.
July 7–August 15
Methods of Teaching General Biology
Bacteriology
Health Education Methods
Health Education Subject Matter
Public Health Laboratory Methods
Public Health Institute for Health Officers and Other Public Health Workers

University of Michigan, Ann Arbor, Mich.
June 30–August 8
General Hygiene and Public Health
School Hygiene
Methods and Materials in Health Education
Child Hygiene
Principles of Public Health Nursing
Organization and Administration of Public Health Nursing
Applied Nutrition
Tuberculosis
Medical Social Case Work
Vital Statistics
Public Health Law and Administration
Public Health Institutes

Michigan State College, East Lansing, Mich.
June 24–August 1
Medical Biology
Bacteriology
Hygiene
Pathology
Physiology

University of Minnesota, Minneapolis, Minn.
June 17–July 26
Elements of Preventive Medicine
Maternal and Child Hygiene
Tuberculosis and Its Control
Principles of Public Health Nursing

University of Missouri, Columbia, Mo.
June 9–August 1
Physical Education
Nursing

University of New Mexico, Albuquerque, N. M.
June 9–August 2
The Elements of School Health
Educational Hygiene

New York University, New York, N. Y.
July 7–August 15
Child Hygiene
Principles of Teaching Health
Methods of Teaching Health

Northwestern University, Evanston, Ill.
June 23–August 16
Personal Hygiene

University of Pennsylvania, Philadelphia, Pa.
July 7–August 16
Hygiene
Physical Education

Pennsylvania School of Social and Health Work, Philadelphia, Pa.
June 23–August 1
Public Health Nursing

Social Problems
Nutrition
School Nursing
Tuberculosis and Its Control

University of Rochester, Rochester, N. Y.
June 25–August 1
Methods in Health Education Activities

Rutgers University, New Brunswick, N. J.
June 30–August 8
Public Health
Preventive Medicine
First Aid

Stanford University, Stanford University, Calif.
June 19–August 30
Public Health Nursing
Health Department Administration
Physical Education and Hygiene

Syracuse University, Syracuse, N. Y.
July 1–August 8
Hygiene

University of Virginia, University, Va.
June 16–July 26 (First Term)
July 28–August 29 (Second Term)
Hygiene and Sanitation
Sex Character Education
Biochemistry
Bacteriology
Physical Education
Human Physiology

University of Washington, Seattle, Wash.
July 18–July 25 (First Term)
July 28–August 28 (Second Term)
Principles of Physical Education
Physical Education Administration (Second Term)
Nutrition
Bacteriology
Principles of Public Health Nursing and Administration (First Term)
The Health Education Movement (First Term)
Physical Education Methods

Western Reserve University, Cleveland, O.
June 23–August 1
Personal Hygiene
Theory and Practice of Physical Education for the Elementary School
Principles of Health Education
Health Education Methods

University of West Virginia, Morgantown, W. Va.
June 6–July 18
Hygiene and Sanitation

University of Wisconsin, Madison, Wis.
June 30–August 8
Junior Red Cross and First Aid to the Injured
Tests and Measurements in Physical Education
Supervision and Organization of Health Education
Bacteriology

UNIVERSITY OF FLORIDA

THE University of Florida, Gainesville, Fla., offered for the first time this year a Short Course in Water and Sewage Treatment from April 8 to 11. For this course the university has been fortunate in obtaining on its faculty state and government officials, engineers, water works officials and others prominent in the fields of water and sewage treatment.

KENTUCKY

THE Governor of Kentucky has appointed the following to the State Board of Health, and their appointments were confirmed by the Senate of Kentucky on March 20, 1930: Dr. E. M. Howard, *President,* Dr. A. T. McCormack, *Secretary,* Dr. G. S. Coon, Dr. Benjamin B. Keys, Dr. Carl J. Johnson, Dr. J. W. Stovall, Dr. F. L. Johnson, Dr. Addison Dimmitt, Dr. L. T. Minish.

RESEARCH FELLOWSHIPS

THE National Tuberculosis Association announces a limited number of fellowships in social research as related to tuberculosis, open to graduate students who have had special training in statistics, social science or public health. Preference will be given to candidates who are interested in pursuing research in public health after the completion of this fellowship.

The fellowship grants will date from the beginning of the academic year in the fall of 1930. They are for a twelve-

month period and the fellowship grant amounts to $1,500 for that period with a month's leave for vacation.

Interested candidates should write to Jessamine S. Whitney, Statistician, National Tuberculosis Association. 370 Seventh Avenue, New York, N. Y., for further information.

DR. WELCH HONORED

DR. William Henry Welch, professor at Johns Hopkins University and known as the "Dean of American Medicine," was honored by the medical profession on his 80th birthday, April 8. Many of his friends and former students met in Washington where a celebration was held. A portrait of Dr. Welch was painted by Alfred Hutty especially for this occasion. A souvenir volume will be published containing an account of the celebration. He was president of the American Social Hygiene Association in 1917, and is now honorary president and chairman of the General Advisory Committee of that association.

MR. DINWIDDIE IN NEW YORK HEALTH DEPARTMENT

COURTENAY Dinwiddie has accepted an appointment as Consultant to the New York City Department of Health, for the current year, for the purpose of making a study of conditions and needs in the child hygiene field.

DELTA OMEGA

LECTURES under the auspices of local chapters of Delta Omega, the honorary public health society, were given in March at the Massachusetts Institute of Technology and the Yale School of Medicine. At the third annual Delta Omega lecture at the Massachusetts Institute of Technology on March 4, 1930, C. C. Young, Ph.D., Dr.P.H., of the Michigan State Department of Health, national president of the society, spoke on "The Trend in the Development of Public Health Laboratories." The speaker at the Yale School of Medicine on March 14, 1930, was George H. Bigelow, M.D., Dr.P.H., State Commissioner of Public Health of Massachusetts, who discussed the official program for cancer control in his state.

DEATH OF HENRY ALBERT

HENRY Albert, M.D., F.A.P.H.A., Health Commissioner of Des Moines, Ia., died on April 7, from a heart attack following an operation for appendicitis.

Dr. Albert was chief of the pathology and bacteriology department of the University of Iowa, and later director of the State Hygienic Laboratory, before becoming Health Commissioner in 1926. He was 52 years old.

SCARLET FEVER CASE

THE long expected suit for patent infringement by Dr. George Dick and Dr. Gladys Dick of Chicago, vs. the Lederle Antitoxin Laboratory of Pearl River, N. Y., is being heard in U. S. District Court for the Southern District of New York, by Judge Caffey (April 16). The Dicks are suing for patent infringement, claiming infringement on 7 of the 10 patent claims. The defense maintains that the patent for Scarlet Fever Toxin and Antitoxin is invalid because of lack of originality, and being developed from prior art. The case will be heard for the next 10 days or 2 weeks, experts being called from all parts of the country to testify both for the plaintiff and the defense.

PERSONALS

PAUL B. BROOKS, M.D., Deputy Commissioner of Health of New York State, has been reappointed to that position by Dr. Parran, Health Commissioner of the state.

DR. TALIAFERRO CLARK has been appointed to the position of Chief of the Division of Venereal Diseases of the U. S. Public Health Service, by Surgeon General Cumming. This position was left vacant by Dr. Thomas Parran who is the new Health Commissioner of New York State.

DR. ANDREW WEBSTER VAN SLYKE of Coxsackie, N. Y., has been the Health Officer of Coxsackie for fifty consecutive years.

GRACE GEORGE was recently appointed to supervise the health education work of the division of child hygiene of the Illinois State Department of Public Health.

DR. ALBERT CRUM BAXTER of Springfield, Ill., was appointed by the Governor to the position of assistant director of the State Department of Health.

THOMAS G. HULL, PH.D., Chief of the Division of Laboratories of the Illinois State Department of Health, has joined the staff of the American Medical Association in Chicago, leaving the State Department on April 1, 1930.

SURGEON GENERAL H. S. CUMMING of the U. S. Public Health Service, Director of the Pan American Sanitary Bureau, was recently made an honorary member of the National Academy of Medicine of Mexico, located in Mexico City.

In October, 1927, Dr. Cumming received a similar honor from the National Academy of Medicine of Peru, and he has lately been made an officer of the Order of Finlay, of Cuba.

CONFERENCES

May 7–10, National Tuberculosis Association, Memphis, Tenn.

June 2, week of, American Water Works Association, St. Louis, Mo.

June 6–14, National Conference of Social Work, Boston, Mass.

June 12–14, Western Branch of American Public Health Association, Salt Lake City, Utah

June 18–19, State and Provincial Health Authorities of North America, Washington, D. C.

June 20–21, Conference of the Surgeon General, Washington, D. C.

FOREIGN

June 21–28, Royal Sanitary Institute, 41st Congress and Health Exhibition, Margate, England

Aug. 3–9, Second International Congress for Sex Research, London, England

Aug. 4–9, International Veterinary Congress, London, England

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